Acoustics | Clocks | Evacuation

swiss made gm elektronik ag

Catalogue

Voice Alarm Control and Indicating Equipment (VACIE)

Valid from 01 / 2021

gm-elektronik.swiss


Akustikanlagen

PA SYSTEMS
VOICE ALARM SYSTEM (VAS)
VOICE ALARM CONTROL AND INDICATING EQUIPMENT (VACIE)
DIGITAL AND ANALOGUE CLOCK SYSTEMS
LOUDSPEAKERS

Swiss Quality

Often unseen, but always unmistakable: the innovative ideas from g+m elektronik ag have been ever-present for 50 years. Our electroacoustic developments continue to set new standards in the markets. Far beyond the borders of Europe.

Our brand name stands for Swiss values and Swiss quality. Sustainable and forward-looking.
We develop, design and manufacture future-oriented solutions based on the in-depth know-how for which our company is renowned. Our innovative strength and long-standing experience guarantee durable, high-quality products that are extremely easy to use.

g+m elektronik ag develops and manufactures according to the ISO international standards 9001, EN 54-16, EN 54-17, EN 54-24, NEN 257 and BS 5839.

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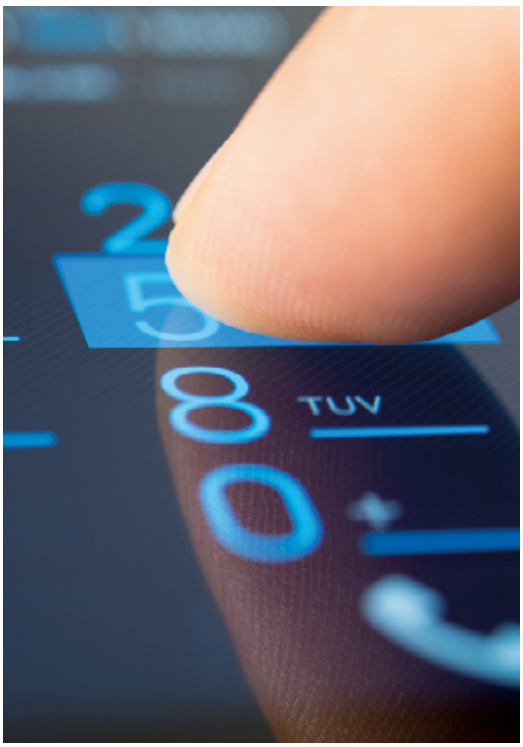
News

Safety announcements via VOIP telephone interface

APS-18.4

This module opens the world of external notification by means of voice alerts in freely selectable zones and areas. Another feature: the alerts, which can only be activated by authorised telephone numbers or users, can be individually tailored to danger situations. This ensures that persons in an emergency receive vital information.

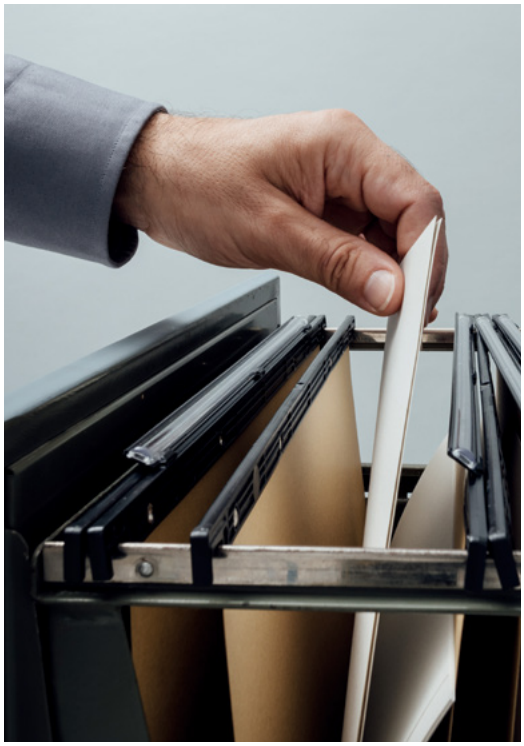


Logging of relevant control data

APS-591

This module facilitates the logging of key activities from the call stations of an APS® system – complete with time stamp and station name.

Actions initiated at a call station are also logged. This helps to maintain a clear overview in the event of a crisis.



Intelligent, functional system amplifier

BO-CD-200-4
(BO-CD-250-4 under construction)

Where complex room scenarios are an issue, these compact, digital multiple amplifiers are the optimal solution for EN 54-16-compliant Voice Alarm Systems.

This is facilitated by the innovative DSP technology. The 4-channel DSP amplifier has four independent output channels, each rated at 200 W, with each channel accepting two separate volume levels for speech and music.

Compact Voice Alarm System

VA-500

The VA-500 is a compact, all-inclusive, wall-mounted voice evacuation system that incorporates all important functions and components. It is optimally suited to all premises and installations in which a PA system is used for emergency announcements and is thus a central part of the safety and security concept, fully complying with the EN 54-16 standard.
The permanent self-surveillance provides warning of failure to any component critical to system operation and even switches over automatically to the integrated emergency power supply or stand-by-amplifier. PA announcements in each individual zone in combination with background music completes the high functionality of this compact evacuation system.

Intuitive interface

Graphical user interface

Operation from touchscreen or computer with LAN/RS232/RC16 bus connection or integrated into an existing building management systems. The existing software interfaces ensure smooth integration into the network: with LAN via RS232/RC16 bus connection or with the GM-7429-BRIDGE into an existing building management system.

Sophisticated operation

Digital microphone consoles APS-3XX.2

Our modern digital microphone consoles guarantee the highest degree of convenience. They are individual programmed according to your needs and can be integrated into your system with a bus system or LAN connection. Up to 255 consoles per bus.

Easy to control

Remote control

Simple, convenient handling: the remote control device is used to set the volume, call up preset parameters and activate stored announcements and functions.

Equipment that you listen to

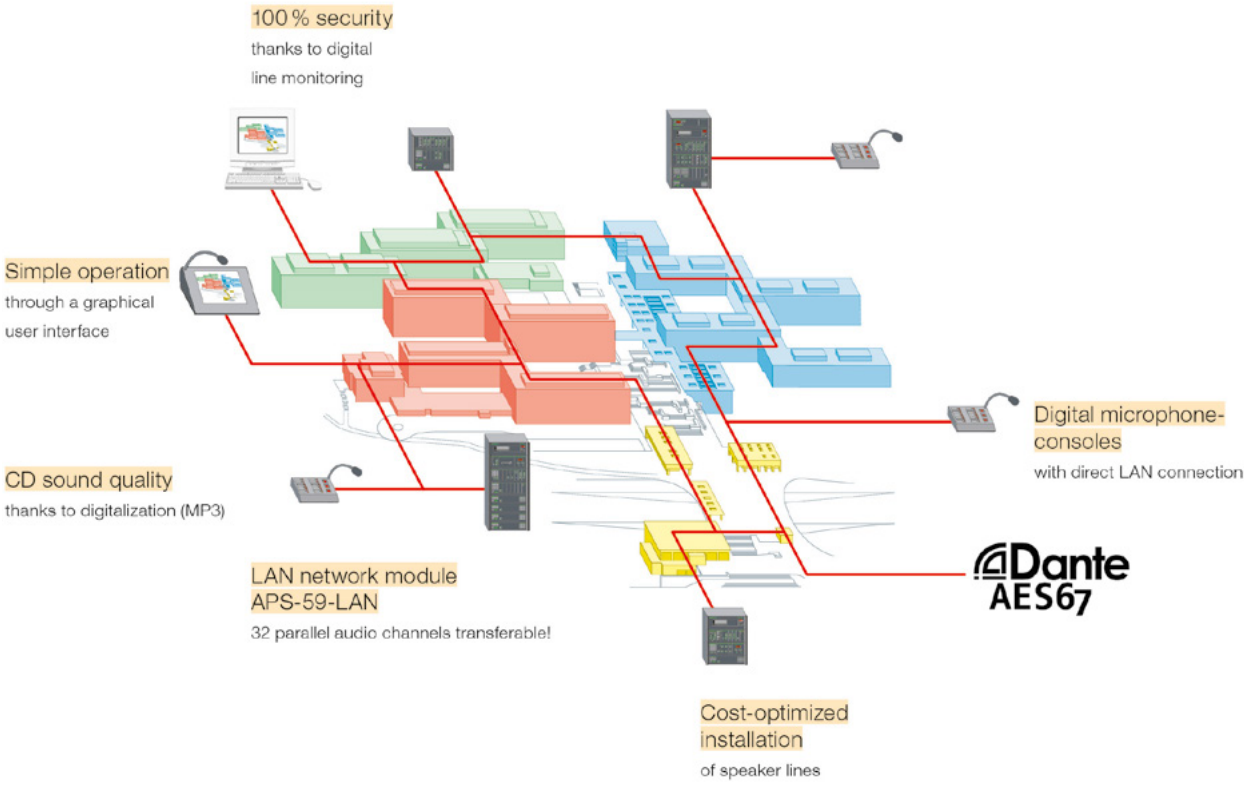
Firefighter microphone-panel GM-FWS-3033-BOX

Programmable Firefighter microphone-panel compliant with the EN 54-16 standard.

Cost-optimized

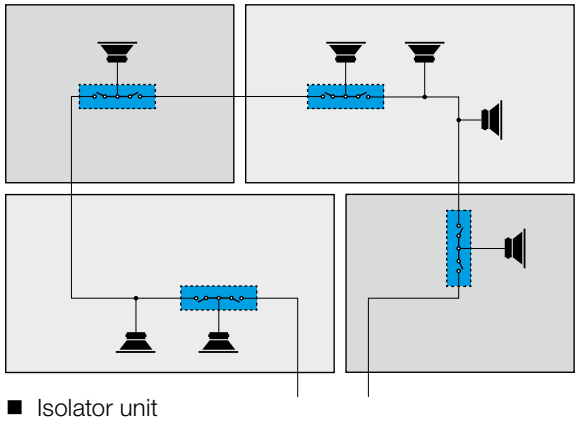
LAN networks

Thanks to the touchscreen-based graphic interface, the system can be integrated into building management systems. The existing software interfaces ensure smooth integration into the network: with LAN via RS232/RC16 bus connection or with the GM-7429-BRIDGE into an existing building management system. Subsystems can be networked using AES67-compliant real-time audio transmission.



LOOP technology

- No expensive E 30 cabling
- Optimal safety through redundant connection (loop)
- Uninterruptible location of short circuit, interruption and ground connection
- Automatic isolation of the problem zone
- Up to 12 loops per device
- Up to 420 isolators per system
- Bidirectional communication between system and isolator unit
- Loop length up to 600 m
- Via 2-wire cabling



■ Isolator unit

Perfectly clear in an emergency

Audible voice alerting systems (VAS) are used wherever there are more stringent safety requirements. Generally, this applies to buildings and rooms in which there a lot of persons not familiar with the escape routes on the premises.
This includes shopping centres, hospitals, office buildings, homes for the elderly, production shops, schools, universities, banks, sports facilities, hotel and congress buildings, administration buildings and railway stations.

The foremost aim of the system is to transmit the voice information with perfect intelligibility in an emergency. Consequently, the endangered persons are able to recognise the situation, take it seriously and take the necessary, targeted action. It has been proven that the spoken word is very important in an emergency: panic reactions or incorrect reactions can be avoided, people escape more calmly and in a more orderly fashion and the escape speed increases.

APS® technology connects

APS® technology is an intelligent, very user-friendly system solution that is also future-proof. Our APS® technology meets the highest standards thanks to features such as LAN networking via AES67 and the latest DSP technology.

Simple ease of use

In the APS® technology we have consistently implemented our principle of «the more complex the system demands, the more user-friendly our solutions». Large overall systems can be easily operated using the APS® technology. You enjoy the highest degree of user convenience with your system solution that can be individually configured from over 100 modules.

Open system architecture

The open and modular overall system for acoustic systems, PA and voice alarm as well as emergency warning systems has many different interfaces. It offers you maximum flexibility in case you would like to link additional systems. With it you can easily integrate fire alarm systems, building management systems or controllers and monitoring of non-acoustic systems.

Secure interfaces

Smart also means that you can directly access the user guide as well as system feedback with guaranteed error detection during interface disruptions. The automatic and continuous monitoring of these interfaces guarantees the prescribed system availability even in emergencies:

- RS232 interfaces to the report output
- LAN connections with software interfaces
- 100 Volt interfaces
- Telephone interfaces
- 0 dB interfaces
- Monitored, potential-free contacts

Clear advantages at a glance

- Free, modular system architecture
- Versatile operation
- Highest degree of system flexibility
- Cost-effective and efficient
- Logical and intuitive
- Optimum integration
- Expandability
- EN 54-16 / EN 50849 certified

High-performance and multi-talented

The APS® technology is characterized by its versatility in every field of application. Whether in public areas or in the company, in outdoor spaces or inside a building – our system solution has demonstrated its reliability and flexibility anywhere where many people come together.

Our APS® technology comes into play here:
- Shopping
- Catering
- Public buildings
- Public transport
- Office buildings
- Churches
- Schools and Universities
- Sports centres and Facilities
- Hospitals
- Homes for the elderly

Sophisticated operation

Simple and clear

Emphasis placed on practice: even complex systems can be operated almost intuitively. As a user you can control and monitor the APS® technology centrally by computer or through a building managment system. You select functions such as announcements or alarm signals directly on a display screen. Error messages are logged with specific details and even time-stamped central announcements can be automatically archived thanks to the open system.

Equipment that you listen to

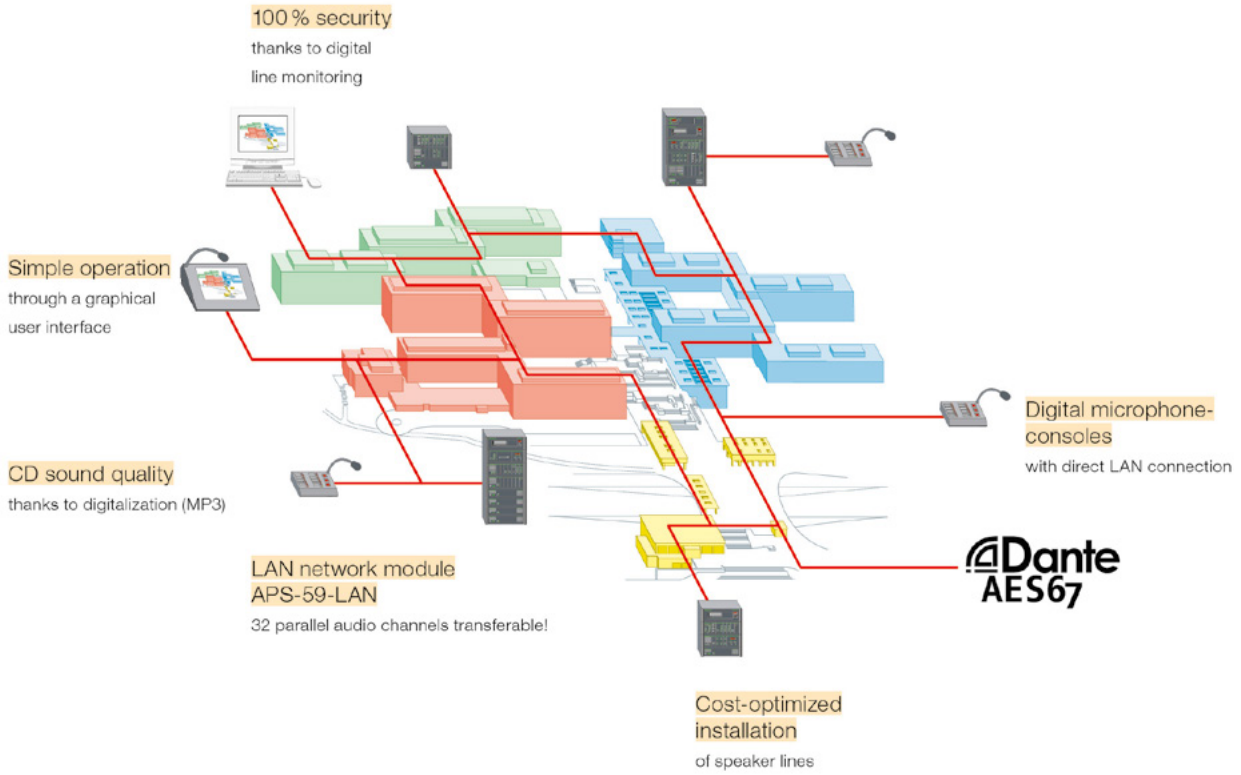
Our modern digital microphone consoles guarantee the highest degree of convenience. They are individual programmed according to your needs and can be integrated into your system with a bus system or LAN connection.

With a graphical user interface operation via touch screen or PC our smart models also are suited for integration into building management systems or touch screen terminals. Existing software interfaces provides for smooth integration into the network.

Strong network architecture

The APS® technology helps you to save costs with the network solution. A standard network connection via Local Area Network (LAN) is enough to transmit data and digitalized audio signals simultaneously over large distances.

You can also expand the system at will at any time using standard network components. Ongoing digital monitoring of networks increases your system's security. In addition, take advantage of the option of connecting to redundant fibre glass cables, thereby minimizing the risk of failure of your overall system.



One technology, many possibilities

Free selection from over 100 modules

Every project is different, and every system as well. Therefore our APS® technology developers have provided a multitude of standard modules. The over 100 hardware components always ensure a custom solution, whatever applications and functions you want.

Modules are easily configured in the respective system with the help of our APS® Software. Upgrades and improvements can be made simply and quickly at any time. We call that flexibility.

Our APS® module families

- Input modules for input signal processing
- Output modules for audio signal transmission to other systems or speaker groups
- Music and signal source modules for generating electronic MP3 audio signals and optimizing general audio signals
- Function and control modules for binary command networking and generation (interfaces)
- Monitoring modules for system function monitoring according to the EN 54-16 standard

Each individual smart module constantly communicates via the digital bus

Freedoms from which you benefit

- Any number of modules can be combined depending on configuration
- Can be expanded very simply and cost-effectively at any time
- Considerable cost saving through minimum wiring work
- Individually programmable to customer specifications
- Very efficient diagnostic possibility

Sound experience with APS®-ARIA

With the APS®-ARIA family you experience sound in the right dimension. At a push of a button you can customize the smart acoustic system at any time to the number of listeners or the respective room size. A valuable expansion especially in separable rooms.

With every APS®-ARIA module you digitally control four independent channels with DSP functions such as dynamic response, delay, equalizer and volume. Stored settings can be retrieved at any time. That is smart and perfect acoustics.

APS®-ARIA Family

Input module APS-11-4
The 4-channel DSP input module has four selectable line or microphone inputs.

Output module APS-33-4
You can use up to eight 4-channel DSP output modules per APS® system.

System module APS-46.1-EQ-RC
With the APS®-ARIA system module APS-46.1-EQ-RC you customize your acoustic system optimally to the given spatial acoustics and to the number of listeners present.

Digital amplifier BO-CD-100-4-EV | BO-CD-200-4-EV
As an EV variant this compact digital multiple amplifier is the optimal solution for a Voice Alarm System inside a complex space situations pursuant to EN 54-16.

Every APS® ARIA module is equipped with the following functions:
- Delay: Adjustable delay up to 122 ms – for distances up to 40 m
- Option Long Delay (LD): Up to 14.5 seconds delay – this correspond a distance of about 4,8 km
- Level: Two different adjustable volume levels
- Equalizer: Emphasises or attenuates certain frequencies, e.g. to increase intelligibility or to suppress unwanted frequencies
- Dynamics: Increases quiet sounds, suppresses signal noise, compresses, limits sound levels

Remote controls for APS®-ARIA

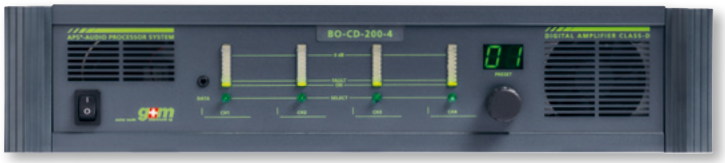
Up to 15 remote control modules can be connected via a cable with a maximum length of 250 m. You can allocate up to 255 functions (sectors) to the buttons and inputs/outputs. The digital volume controllers can be allocated either singly or to a maximum of seven groups. Using media controls, you can use the module to activate the complex functions of the APS® control panel, such as volume or control contacts.

Extra Power

Simple and clear

We amplify the strengths of our APS® solutions. Based on this principle we have outfitted our systems with the state of the art digital amplifiers. The 100 Volt amplifiers with Class-D technology are an additional guarantee of top quality. With 50 percent higher efficiency they clearly overtake the previous analog technology.

Additional plus: The devices reduce the demand for emergency power by half and require only half as much space compared to conventional analog amplifiers. The new compact high-tech amplifiers with their PFC switched-mode power supply guarantee 100 percent constant power at full capacity utilization thanks to our Class-D technology.



BO-CD-200-4 (BO-CD-250-4 in preparation)

Reaching your target market

Let your advertisement speak for itself

With the digital APS-24.2 message player you can freely choose when and where to play which advertisements. Various texts and text groups can be individually configured so that you can convince customers always at the right time in the right place with your advertising message.

From the grouping of advertising text files, to the timetable and targeted zone selection for your recording – you simply choose all the functions of the APS® system through the graphical user interface on the display screen.

Real-time clock
with summer/winter time switching

LAN connection
to import by central customer specific data via internet

Access levels
facilitate user-friendly operation

Very simple configuration
via web browser

Time-controlled activation
of advertisement blocks thanks to the integrated time planner

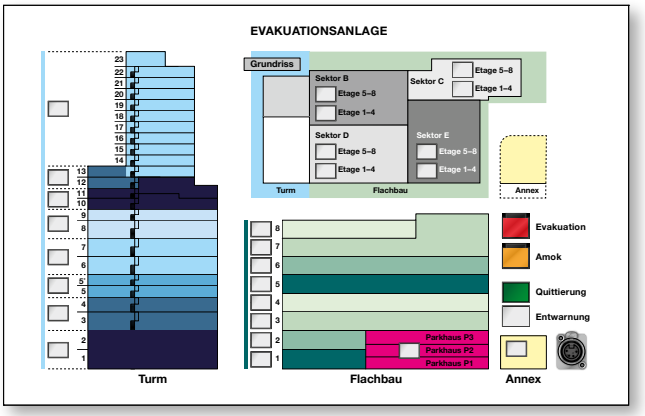
Manual triggering
of advertisement blocks via microphone console or 4-button module GM-7421

Freely definable advertisement files
in any length and order

Zone-specific advertising texts
at individual times, in certain zones

Easy to control

An acoustic system is only as secure as when it can be operated easily via remote control. User-friendly convenience is the magic word to which we at g+m elektronik ag especially dedicate ourselves in the development of our remote controls. The secret of our successful devices lies in the fact that only the most important controls are accessible and erroneous handling is virtually ruled out.
Our remote controls can be connected to microphones and musical players where volume and resonance can be individually regulated. You activate your acoustic system simply by pressing an illuminated pushbutton.
In addition, you have a choice of programming possibilities available such as phantom power or priorities.



Project based Control Panel

APS-442

APS-441-2HE incl. GM-7421-ARC / GM-7420-ARC

ARC Console incl. GM-7421-ARC / GM-7420-ARC

1. Basics

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The acoustics

Introduction

What actually is sound? By «sound», we mean a mechanical oscillation that is propagated in solids, air, water or gas. Scientifically speaking, the oscillation is referred to as a periodic, high-speed pressure fluctuation caused by a sound source.

This may be a human voice or a musical instrument.
In this case, we speak of acoustics. If the sound is converted to electrical signals or if electrical signals are converted to sound waves, we speak of electroacoustics.

Sound

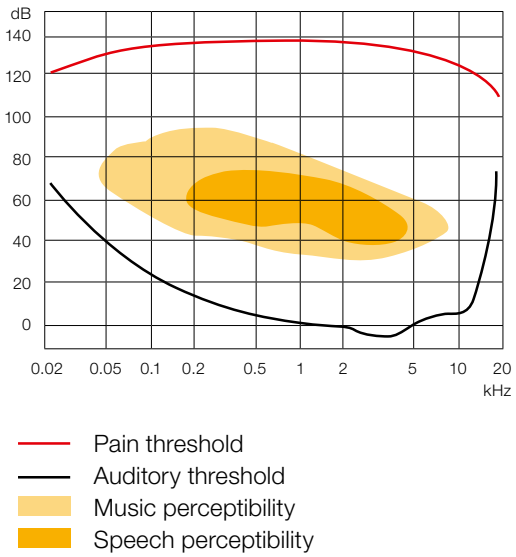
Sound may be transmitted in two ways: naturally or in the form of electrical signals, i.e. energy. The sound waves are propagated in the same direction as they originate in each case and spread unhindered. The sound waves are propagated in longitudinal direction in liquids and gases. Sound is not transmitted in a vacuum owing to the lack of a medium. Such a vacuum is used, for instance, in windows for sound insulation in order to interrupt the sound waves.

The magnitude of the sound wave designates the strength of the pressure fluctuations. It is termed sound pressure and is measured in decibels (dB). The sound pressure may differ extremely – from a rustling leaf to take-off of a jet aircraft. The number of oscillations per second is termed frequency and is measured in Hertz (Hz). At the same time, the frequency determines the pitch. The human ear can hear frequencies from 20 to 20'000 Hz. The lower limit is referred to as auditory threshold and the upper limit is referred to as pain threshold. Sound waves below 16 Hz are referred to as subsonic or infrasound and sound waves over 20'000 Hz are referred to as ultrasound.

Both the auditory threshold and the pain threshold are independent of frequency. A higher acoustic energy must be expended in order to exceed the thresholds in the lower and upper frequency ranges. The energy expenditure is less in the medium frequency range, and so the pain threshold is reached faster.

On the *Auditory sensation area* diagram, the orange-coloured area shows the frequency range in which human speech is perceived intelligibly. If external noise sources, e.g. ambient noise, superimpose this speech information, the volume needs to be increased. Alternatively or in addition, it is possible to reduce the distance between the sound source (e.g. loudspeaker) and the listener so as to maintain intelligibility of the speech information.

Auditory sensation area



If we double the sound power measured in Watts, it is perceived as a volume difference which is just discernable in the sector of voice or music. Multiplying the sound power by ten is perceived by the human ear as a doubling of the volume.

Room acoustics

Achieving the right sound in a room has a major influence, e.g. on the public in a theatre or concert hall. But it is exactly the same for conversations in a restaurant and announcements in a shopping centre or in a station. We encounter the challenges of sub-optimal room acoustics everywhere in day-to-day life.

Consequently, the room-acoustics conditions play an essential role for an electroacoustic or PA System. The sound is propagated radially starting from a sound source. Part of the sound waves is reflected by the walls in a closed room or area and part is absorbed depending on the fixtures and fittings.

If the reflected sound predominates over the direct sound and does not die away too quickly, this may be perceived as pleasant in the case of musical performances, such as organ recitals. By contrast, in the case of voice transmission, the reflected sound leads to a clear reduction in intelligibility.

Structural conditions in a room can easily become obstacles in the sound field. This relates to columns for instance which substantially disturb sound propagation. The sound is reflected, scattered or deflected by the relevant obstacle.

Echo

Everyone knows the effect from the mountains: our ears perceive a sound twice, with a slight time difference. We speak of an echo. But in fact we have heard the actual sound and the greatly delayed reflection of its sound wave separately. Our ear is able to perceive such an echo if the time between the original sound and the sound reflection is at least 20 milliseconds. So-called early reflections occur within this delay time.

If loudspeakers for instance are installed more than 17 meters apart, it is very probable, at a speed of sound of 330 meters per second, that an echo will be produced. This necessarily has a very disturbing effect on intelligibility.

We speak of a flutter echo if an echo is repeated at time intervals of 50 to 100 milliseconds. It is frequently concave surfaces, for example balconies or galleries in the room, which amplify such an echo.

Reverberation

The most important physical variable for electroacoustics in a room is the reverberation time. It defines the time that passes until the sound level has dropped by 60 dB. If the level of a sound event in a room is 90 dB, this means a remaining sound of 30 dB after a 60 dB drop. This remaining sound corresponds to the normal background noise of a large room.

Of course, the volume, the room occupancy and the sound-absorption capacity of a room determine its reverberation time.

The reverberation time is independent of frequency since different materials absorb the sound to differing extents (critical reverberation time for halls and churches: 1.5 to 3 seconds).

The absorption capacity of wall coverings, interior fixtures and fittings is as follows:

poor: glass surfaces, marble and fair-faced plaster
good: wood surfaces, rough plaster and parquet flooring
very good: carpets and acoustic elements

An increased sound-absorption capacity is more advantageous in electroacoustics for transmission of voice signals. It reduces the reverberation time and increases syllable intelligibility. This applies for instance to auditoria, lecture theatres, conference rooms or classrooms. The higher sound absorption can be compensated for easily by a higher acoustic power.

Voice intelligibility

Voice intelligibility is one of the most important criteria when selecting the acoustic properties of a room. An intelligibly transmitted word can save human life in an emergency or assist concentration of those listening at an event of some kind. In electroacoustics, voice intelligibility is dependent on many factors: the frequency response of the transmission path, ambient noise, reverberation time, echo, quality and directional characteristic of the loudspeakers, the volume of the voice signal and the psycho-acoustic masking effects.

An internationally standardised, physical measuring method is used to guarantee the voice intelligibility of electroacoustic and PA Systems: STI (Speech Transmission Index). In this case, a measuring microphone receives a test signal which is analysed by an STI measuring instrument as regards its voice intelligibility.

The minimum value for electroacoustic emergency-warning systems in accordance with the User Standard must be 0.5 or higher on the STI evaluation scale.

STI value	
0.00–0.30	poor
0.30–0.45	weak
0.45–0.60	appropriate
0.60–0.75	good
0.75–1.00	excellent

Sound pressure conditions

Ambient noise has a substantial influence on the voice intelligibility: it is referred to as disturbing noise. The user standards prescribe for instance that the announcement of a voice alerting system must be

- at least 10 dB above the disturbing noise level.

Doubling the distance from the sound source reduces the noise level by 6 dB.

Distance from the sound source	Sound pressure	Remarks
1 meter	0 dB	Reference point (90 dB / 1 m)
2 meters	-6 dB	Corresponds to ½ of the original sound pressure
4 meters	-12 dB	Corresponds to ¼ of the original sound pressure

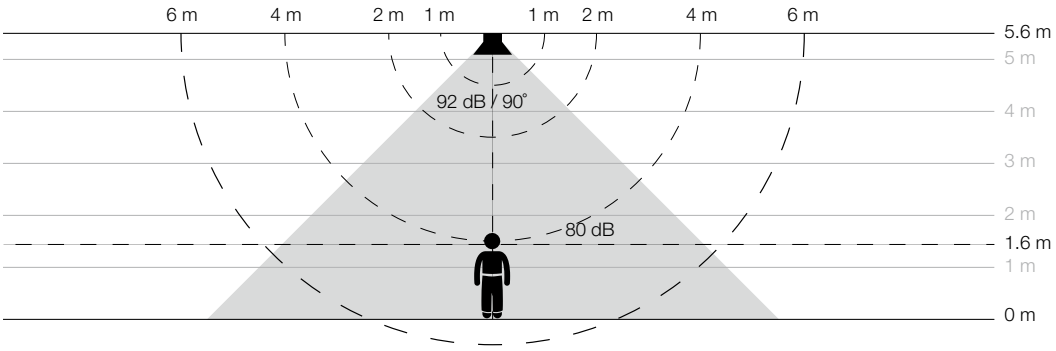
Example sought minimum sound pressure, loudspeakers

To define the sound pressure (dB) of the loudspeaker we require:

- The ambient noise level
- The volume at the listener's location

Example: shopping centre with a room height of 5.6 m

Measured sound level, environment	70 dB_{SPL}
Disturbing noise level, distance	+10 dB_{SPL}
Required minimum sound pressure	**80 dB_{SPL}**



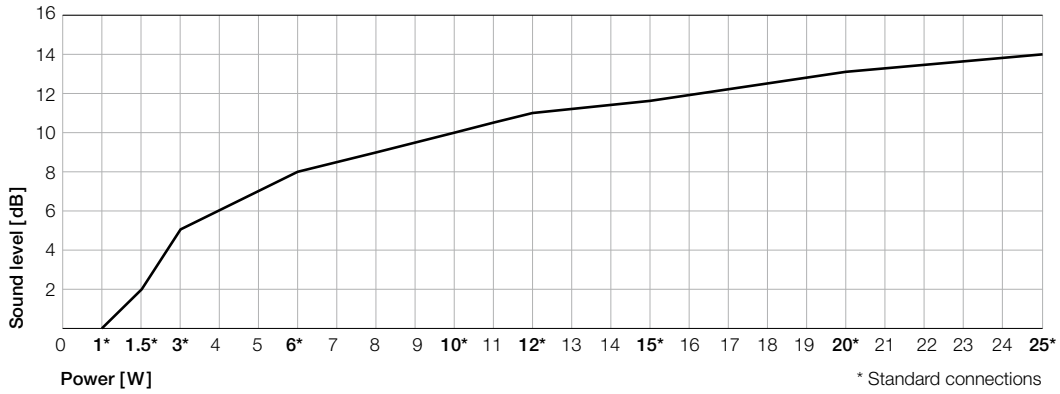
Sought sound pressure dB_{SPL} and power for loudspeaker

Required minimum sound pressure	80 dB_{SPL}	
Sound pressure reduction at 4 m (5.6 - 1.6 m)	+12 dB_{SPL}	
Sound pressure for angle reserve	+ 6 dB_{SPL}	(Guideline value)
Required sound pressure for loudspeaker	**98 dB_{SPL}**	

For example: omnidirectional speaker with nominal sound pressure (1 W / 1 m) 92 dB_{SPL} / 90°.
Required power for sound pressure 98 dB_{SPL} are 5 Watt (see power calculation curve).

Power calculation, loudspeakers

On the selected speaker, the sound pressure must be increased by means of the power.
We choose the 5 W power rating and so we increase the sound pressure by +7 dB.



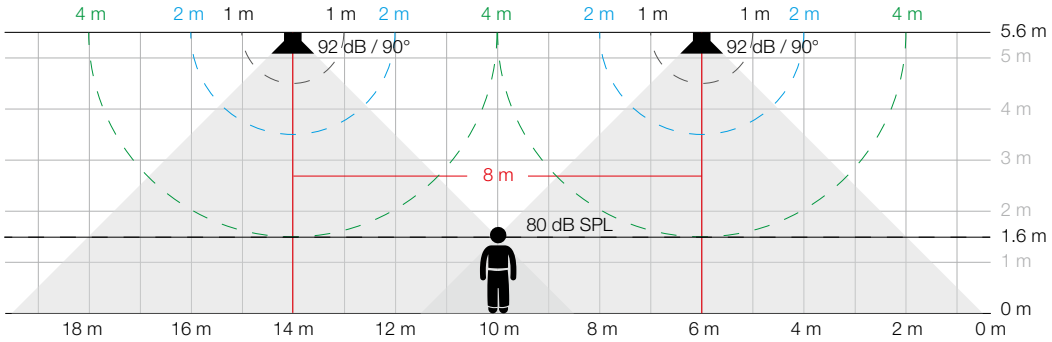
Doubling the power increases the sound level by 3 dB.

Example calculation of the number of loudspeakers

To determine the number of loudspeakers in a room we require:
- The room height or ear height
- The radiation angle

Example for a shopping centre:
- Room height = 5.6 m, Ear height = 1.6 m
- Radiation angle: $\alpha = 90^{\circ}$

Calculating the loudspeaker spacing: 2 × Tan ($\frac{\alpha}{2}$) × 4 m (Room height 5.6 m - Ear height 1.6 m) = 8 m



100 Volt technology

Fundamentals

In the case of signal transmission via a 100 V amplifier, the voltage and impedance are increased – and this greatly reduces the current. This allows the use of relatively small cable cross-sections even over large distances. Not infrequently, large systems consist of well over 100 loudspeakers of greatly varying designs and power ratings.

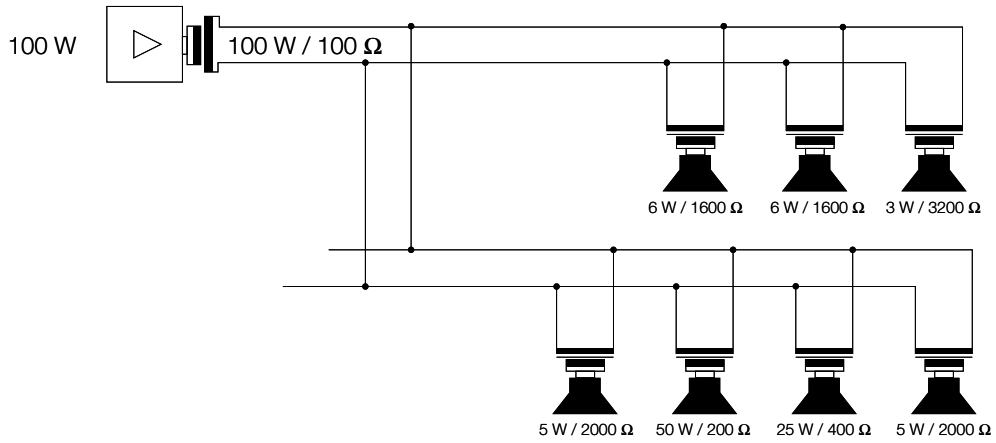
Consequently, 100 V technology offer the following advantages in the case of complex PA Systems with a large number of loudspeakers:

- Matching impedance is simplified
- Only individual loudspeakers fail if there is a loudspeaker defect
- The power losses are reduced if cable paths are long

Example circuit

If 100 V loudspeakers are connected in parallel, only the actual loudspeaker in question is affected in the case of a defect – so there is only a minimal impedance shift.

Example circuit



Power losses

Power at the speaker in Watts with a 100 W / 100 V amplifier

Cable length	4 Ω Loudspeaker					8 Ω Loudspeaker					100 V Loudspeaker				
Specifications	Specifications in mm²					Specifications in mm²					Specifications in mm²				
in meters	0.75	1.0	1.5	2.5	4.0	0.75	1.0	1.5	2.5	4.0	0.75	1.0	1.5	2.5	4.0
5	89.1	91.6	94.3	96.5	97.8	94.3	95.7	97.1	98.2	98.9	99.5	99.6	99.8	99.9	99.9
10	79.9	84.3	89.1	93.2	95.7	89.1	91.6	94.3	96.5	97.8	99.1	99.3	99.5	99.7	99.8
15	72.0	77.8	84.3	90.1	93.6	84.3	87.8	91.6	94.9	96.7	98.6	98.9	99.3	99.6	99.7
20	65.2	72.0	79.9	87.1	91.6	79.9	84.3	89.1	93.2	95.7	98.1	98.6	99.1	99.4	99.6
25	59.4	66.8	75.8	84.3	89.7	75.8	80.9	86.6	91.6	94.6	97.7	98.2	98.8	99.3	99.6
30	54.3	62.2	72.0	81.6	87.8	72.0	77.8	84.2	90.1	93.6	97.2	97.9	98.6	99.1	99.5
35	49.8	58.0	68.5	79.0	86.0	68.5	74.8	82.0	88.6	92.8	96.7	97.5	98.4	99.0	99.4
40	45.9	54.3	65.2	76.6	54.3	65.2	72.0	79.9	87.1	91.6	96.3	97.2	98.1	98.9	99.3
45	42.4	50.9	62.2	74.2	82.6	62.2	69.3	77.8	85.7	90.7	95.8	96.9	97.9	98.7	99.2
50	39.3	47.8	59.4	72.0	80.9	59.4	66.8	75.8	84.3	89.7	95.4	96.5	97.7	98.6	99.1
60	34.0	42.4	54.3	67.8	77.8	54.3	62.2	72.0	81.6	87.8	94.5	95.8	97.2	98.3	98.9
70	29.8	37.9	49.8	64.0	74.8	49.8	58.0	68.5	79.0	86.0	93.7	95.2	96.7	98.0	98.8
80	26.2	34.0	45.9	60.5	72.0	45.9	54.3	65.2	76.6	84.3	92.8	94.5	96.3	97.8	98.6
90	23.3	30.7	42.4	57.3	69.3	42.4	50.9	62.2	74.2	82.6	91.9	93.9	95.8	97.5	98.4
100	20.8	27.9	39.3	54.3	66.8	39.3	47.8	59.4	72.0	80.9	91.1	93.2	95.4	97.2	98.2
150	12.9	18.3	27.9	42.4	56.1	27.9	35.9	47.8	62.2	73.4	87.1	90.1	93.2	95.8	97.4
200	8.7	12.9	20.8	34.0	47.8	20.8	27.9	39.3	54.3	66.8	83.4	87.1	91.1	94.5	96.5
250	6.3	9.6	16.2	27.9	41.2	16.2	22.3	32.9	47.8	61.1	79.9	84.3	89.1	93.2	95.7
300	4.8	7.4	12.9	23.3	35.9	12.9	18.3	27.9	42.4	56.1	76.6	81.6	87.1	91.9	94.9
350	3.7	5.9	10.5	19.8	31.5	10.5	15.1	24.0	37.9	51.7	73.5	79.0	85.2	90.7	94.0
400	3.0	4.8	8.7	17.0	27.9	8.7	12.9	20.8	34.0	47.8	70.6	76.6	83.4	89.0	93.2
450	2.5	4.0	7.4	14.7	24.9	7.4	11.0	18.3	30.7	44.3	67.8	74.2	81.6	88.0	92.4
500	2.1	3.3	6.3	12.9	22.3	6.3	9.6	16.2	27.9	41.2	65.2	72.0	79.9	87.1	91.6
1000	0.6	1.0	2.1	4.8	9.6	2.1	3.3	6.3	12.9	22.3	45.9	54.3	65.2	76.6	84.3

Example of power losses

The cable length between an amplifier and a 100 W loudspeaker is 100 m.
The cable cross-section is 1.5 mm².
What power can the loudspeaker emit?

4 Ω Loudspeaker = 39.3 W
8 Ω Loudspeaker = 59.4 W
100 V Loudspeaker = 95.4 W

Safety through speech according to EN 54-16

Fast and intelligible information in emergencies is required where there are a lot of people every day. Audible voice alerting systems (VAS) are used in such a danger situation: These are sound amplification and sound distribution systems for emergencies. They are a part of the fire alarm systems and comply with the relevant, applicable national or international standards and regulations.

Aims

Voice alarm and indicating equipement (VACIE) allows persons who are located in the danger zone inside or outside a building to be informed and alerted quickly. Pre-recorded or situation-specific texts ensure that the persons in question receive precise announcements, even in more than one language. The foremost aim of the system is to transmit the voice information with perfect intelligibility in an emergency.

Consequently, the endangered persons are able to recognise the situation, take it seriously and take the necessary, targeted action. It has been proven that the spoken word is very important in an emergency: panic reactions or incorrect reactions can be avoided, people escape more calmly and in a more orderly fashion and the escape speed increases.

Use

Voice alarm and indicating equipements are used wherever there are more stringent safety requirements. Generally, this applies to buildings and rooms in which there a lot of persons not familiar with the escape routes on the premises.

This includes shopping centres, hospitals, office buildings, homes for the elderly, production shops, schools, universities, banks, sports facilities, hotel and congress buildings, administration buildings and railway stations.

Product Standard EN 54-16

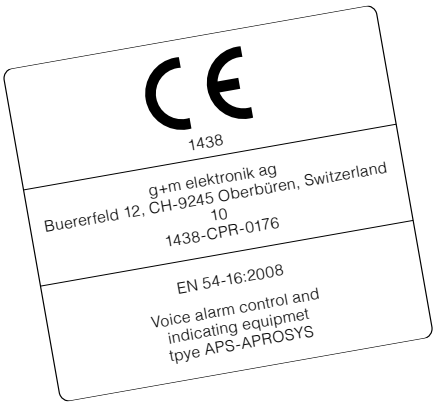
The Voice alarm and indicating equipement is an important part of the overall safety and security concept. Consequently, the system must be available and operationally reliable without fail, as prescribed in Standard EN 54-16. Permanent self-monitoring of the sound signal path and the essential peripherals allows the audible voice alerting system to detect safety-relevant defects and to indicate them to the system administrator within 100 seconds.

Specifically, this means that the system monitors itself, from the microphone capsule through the input modules and amplifiers to all loudspeaker cables. This also includes the digital memories of the sound signal sources for alarm texts. The peripherals which are also monitored include the main power supply, the emergency power supply and the battery charge state. The faults are logged reproducibly in the system at all times if faults occur in the monitoring system.

User Standards
VDE 833-4
NEN 2575
BS-5839
…

Planning, installation and operation of a VACIE system in accordance with EN 54-16 are defined in the relevant national standards.

Only VACIE systems featuring an official EU Certificate of Conformity and a corresponding CE mark may be used since April 2011 throughout Europe. These certificates may be issued only by testing agencies defined Europe-wide (www.ec.europa.eu).



Planning and installation

Experienced professionals are needed for planning, installing and commissioning a VACIE system. The systems may be planned, serviced and maintained only by proven specialist companies.

A broad range of services is involved in the process of planning an emergency PA System:

- Advice on room acoustics
- Scope of PA System
- Alerting zones
- Number and location of fire brigade microphones
- Operator's alarm organisation
- A/B cabling

The loudspeaker cables must comply with the specifications of the system manufacturer and the relevant national fire-protection standard. The cable cross-section will depend upon the relevant cable length, the voltage and the required power.

It is absolutely essential that the entire emergency system function faultlessly for at least a further 30 minutes in a danger situation, e.g. if a fire breaks out. This functional endurance must be guaranteed for the following connections:
Loudspeaker riser cables as far as each fire zone
Lead-throughs through a fire zone
Connection cables between the voice alerting system and the fire alarm system
Cables to the fire brigade call point

Expl.: One of three security levels must also be defined on voice alerting systems in accordance with German National Standard VDE.

Commissioning

Acceptance testing

Maintenance

The basic functions and the fire-protection concept for the VACIE system, referred to the installation, are fully tested and logged. This also includes the acoustic parameters of the disturbing sound level, of the wanted sound level and the relevant voice intelligibility, whereby an STI value (Speech Transmission Index) of at least 0.5 should be reached.

Acceptance testing of an electroacoustic emergency system is performed by qualified testing experts. We absolutely recommend that you conclude a maintenance contract with the manufacturer of the overall system in order to guarantee full functionality at all times.

The contract should foresee two to three inspections per year and annual maintenance. This covers all required work including testing the individual items of equipment, operation of them in the entire system, re-adjustment of the complete system with instructions and the entries in the logbook.

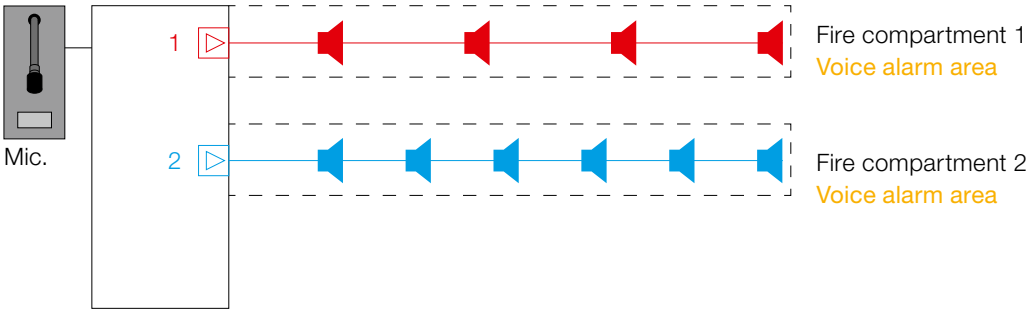
It is also advisable to conclude a servicing contract so as to be able to rectify possible faults within 24 hours. The various intervention times – the length of time between an enquiry and analysis or solution – and the relevant materials needed can be clearly defined in such a contract.

Expl.: three defined safety levels in accordance with german National Standard VDE

Safety level 1

Safety level 1 is recommended for buildings smaller than 2'000 m² and in which there are normally less than 200 persons.

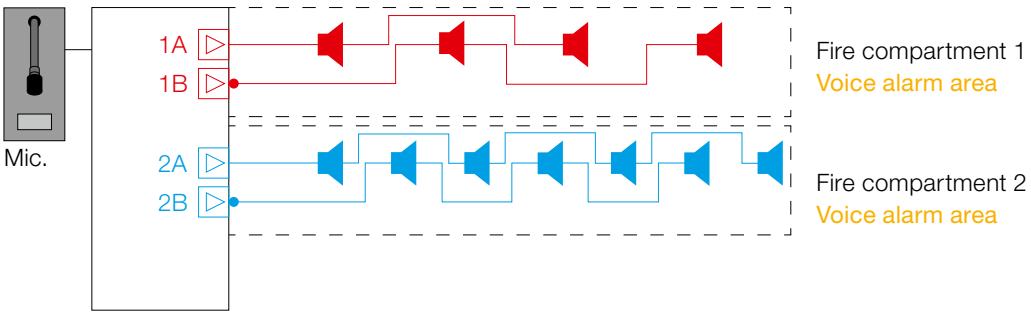
A separate supply cable must be installed for each fire zone. If there is a defect in the transmission path, the PA System may fail only in one fire zone.



Safety level 2

Safety level 2 (A/B cabling) is recommended for buildings larger than 2'000 m² and in which there are normally more than 200 persons.

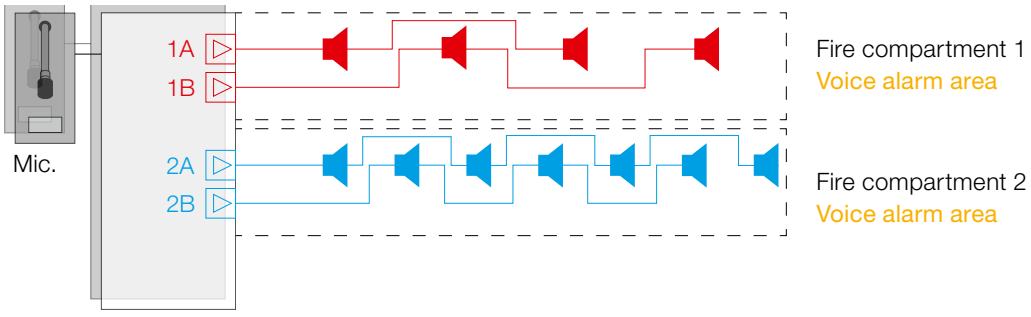
The entire area of action must still receive PA signals in the event of a fault in the transmission path. The voice intelligibility in this case may not drop below 0.45 STI and the value may not drop by more than 3 dB.



Safety level 3

Safety level 3 is recommended for buildings with maximum safety level.

The entire area of action must still receive PA signals in the event of a fault in the overall system. The voice intelligibility in this case may not drop below 0.45 STI and the value may not drop by more than 3 dB.



No planning or calculation examples guaranteed

2. Systems

2.1 Overview Systems 32

2.2 Compact Systems for Public Address Systems 33

2.3 VA-500 Compact Voice Alarm System 37

2.4 APS®-APROSYS Voice Alarm Systems 42

2. Systems

2.1 Overview systems

The following chapter contains equipment and services for Public Address Systems (PA), Sound Systems for Emergency Purposes (SSEP) and Voice Alarm Control and Indicating Equipment (VACIE).

Typ	Product family	Preferred area of use	Picture
Mixing amplifiers	LC-CD	PA	
Compact Public address systems including Master clock	EVAC-MC-LC250	PA, Master clock	
Compact Voice Alarm System	VA-500	VACIE, VAS	
Modular Voice Alarm System	APS®-APROSYS	VACIE, VAS, PA	

The corresponding data sheets can be found in the login area at **gm-elektronik.swiss**

2.2 Compact Systems for Public Address Systems

2.2.1 Mixing amplifier LC-CD for Public Address Systems

Universal amplifier 250 Watt — 63-1608979-01-01

LC-CD-250

Mixing amplifier with 6 inputs for sound reinforcement solutions

- Amplifier 250 Watt RMS
- 6 inputs for microphone and music, individually adjustable
- 12 definable chime or voice files
- USB input for programming

Important notes:
LC-CD-250 can be easily configured via software. Configuration flat rate on request

Scope of delivery: Amplifier

Technical data

Input 1	MIC 1: -63 dB, 200 Ω symmetric, XLR 5-pin with priority, phantom power included
Input 2 – 3	MIC 2 bzw. MIC 3: -63 dB, 200 Ω symmetric, XLR 5-pin with priority, phantom power included or AUX 1, -10 dB, 47 kΩ, asymmetric
Input 4 – 6	AUX 3–6: -10 dB, 47 kΩ, asymmetric, Socket Cinch
Output 1	100 V, Connector block
Output 2	0 dB, Socket Cinch
Power supply	180 to 250 VAC, 50/60 Hz
Current consumption	1,25 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	425 × 89 × 320 mm
Weight	7 kg (LC-CD-250)
Surface	Powder coated, dark grey

Version

LC-CD-100 Universal amplifier 100 W Mixing amplifier with 6 inputs for sound reinforcement solutions. Product features like LC-CD-250, but: - Amplifier 100 Watt RMS		63-1608977-01-01
LC-CD-150 Universal amplifier 150 W Mixing amplifier with 6 inputs for sound reinforcement solutions. Product features like LC-CD-250, but: - Amplifier 150 Watt RMS		63-1608978-01-01

Accessories

APS-301-P-C5 Microphone console with PTT button, XLR, 3 m - Analogue Microphone console		63-1310361-01-01
MC-42 Mounting brackets 19", 2 U - 19" adapter, pair of brackets with screws		63-1203087-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01

2.2.3 EVAC-MC-LC250 Comapct PA system incl. Master clock and pre-recorded messages

The EVAC-MC-CD-250 consists of two components, which are delivered pre-assembled as one station.

EVAC-MC Compact Public address system with Master clock
LC-CD-250 Mixing amplifier with 250 Watt

Compact Public address system incl. Master clock — 63-1810760-01-01

EVAC-MC-LC250

Universal combination of memory and control unit with a master clock and emergency power supply combined with a LC-CD 250 W Class D mixing amplifier

LC-CD-250
- Features as described on page 33

- Additional battery feed option (integrated)

EVAC-MC
- 4 definable audio files

- Control / synchronization from to 120 slave clocks, Time code (TC) or pulse method

- SD card stores 11 MP3 files and master clock function

- Clock programming manually or via PC configuration software

- LED status display

- 2 potential-free control outputs for external controls

Technical data

LC-CD-250	See page 33
EVAC-MC	
Dimensions (W × H × D)	425 × 85 × 320 mm (2 U)
Power supply	180–250 V AC
Connected load	40 VA
Voltage output for clocks	28–30 V DC
Output, bus drivers, clocks	1.8 A, 2-wire, time code or pulse
Backup battery	Lithium
Time memory	10 Years
SD card	Max. 16 GB
Circuits	4 (2× internal, 2× external)
Signal points	500
Audio output	2× symmetric, with connector block
Weight	3,2 kg
Surface front	Powder coated, dark grey
Operating temperature	0 °C to 40 °C

Important notes:

LC-CD-250
The LC-CD-250 can be easily configured via software. Configuration fee on request.

EVAC-MC
Menu-guided configuration directly on the device.
Time functions can be easily programmed via PC software and stored on the SD card.

Scope of delivery: EVAC-MC-LC250

Accessories

APS-301-P-C5 Microphone console with PTT button, XLR, 3 m - Analogue Microphone consol		63-1310361-01-01
MC-42 Mounting brackets 19", 2 U - 19" adapter, pair of brackets with screws (for EVAC-MC-LC250 are 2 sets of mounting brackets necessary!)		63-1203087-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01

2.3 VA-500 Compact Voice Alarm System

Compact Voice Alarm System EN 54-16 — 63-1111431-01-01

VA-500

Compact Voice Alarm System with monitored fireman's microphon

- Touchscreen 4.3" with backlight
- Possibility of connecting up to 6 VA-500 units
- Up to 4 consoles connectable (2 × VA-FMCT or 4 × VA-FMC, monitored)
- Up to 16 Microphone consoles VA-MC
- Integrated microphone (monitored)
- AUX and voice input
- 7 monitored inputs for triggering (alarms)
- 6 Zones for loudspeaker lines (A+B per zone)
- 500 (400) Watt total output, max. 250 Watt per zone
- Integrated backup amplifier
- 3 configurable relay outputs
- Integrated and monitored battery backup
- SD Card with up to 20 texts (exchangeable)
- Wall mounting

Standard EN 54-16
CE

Scope of delivery: Compact System

Important notes:
Battery-/power operation (Example):
P_{max} = 500 W, battery = 26 Ah,
Stand-by time 24 h,
Full load alarming time 0,5 h

Technical data

Frequency range	60–20'000 Hz (Microphone) 90–20'000 Hz (AUX Input)
Output power (Audio)	500 Watt (at 230 VAC supply) 400 Watt (at 24 VDC Battery operation)
Output voltage	100 Volt
Power supply	230 V AC/24 V DC
Current consumption	2,9 A at 230 VAC 20 A at 24 VDC
Operating temperature	5 °C to 40 °C
Dimensions (W × H × D)	430 × 620 × 240 mm
Weight	19,3 kg
Surface front	Powder coated, dark grey

Accessories

Akku 12 V/26 Ah — 63-5300059-01-01
Battery for emergency power supply
12 V/26 Ah
- 2 pieces required

Digital microphone console for VA-500, 6 buttons — 63-1111434-01-01

CE

Scope of delivery:
Microphone console, without connecting cable

VA-MC-506

Microphone console with 6 call buttons for up to 6 zones

- Up to 16 Microphone consoles VA-MC, connectable
- 6 zone keys, 1 group key
- 1 Push-to-talk button
- LED display for each zone

Technical data

Connection	2 × RJ45 (In / Out)
Cable length	Max. 1.000 m
Power supply	24 V DC
Current consumption	16 mA
Operating temperature	5 °C to 40 °C
Dimensions (W × H × D)	116 × 60 (416) × 200 mm
Weight	0,6 kg
Material, Colour	Plastic, dark grey

Version

VA-MC-512 — 63-1111435-01-01

Microphone console with 12 call buttons up to 12 zones
- Up to 16 microphone consoles VA-MC, connecable
- 12 zone buttons, 1 group button
- 1 Push-to-talk button
- LED display for each zone

Fire brigade microphone console for VA-500, 12 selection keys, 6 function keys

63-1111433-01-01

VA-FMC-512

Fire brigade microphone console for up to 12 zones/alarm areas applicable for clearing/evacuation functions, without microphone

- Up to 4 consoles connectable (2 × VA-FMCT or 4 × VA-FMC)
- 12 selection keys
- 1 Push-to-talk button, 1 emergency button
- LED display for each zone
- LED-Status display (monitoring functions)

CE

Scope of delivery:
Microphone console, without connecting cable

Technical data

Connection	2 × RJ45 (In/Out)
Cable length	Max. 1'000 m
Power supply	24 V DC
Current consumption	130 mA
Operating temperature	5 °C to 40 °C
Dimensions (W × H × D)	230 × 80 × 200 mm (without microphone)
Weight	1,55 kg
Material, Colour	Plastic, dark grey

Accessories

VA-MG-001 Dynamic gooseneck microphone for VA-FMC/FMCT		63-1111437-01-01
VA-MH-001 Dynamic hand-held microphone for VA-FMC/FMCT		63-1111438-01-01
VA-BOX-FMC Metal housing for VA-FMC/FMCT (flush-mount)		63-1111436-01-01

Fire brigade microphone console for VA-500, with touchscreen and 2 function keys

63-1111432-01-01

CE

Scope of delivery:
Console, without connecting cable

VA-FMCT-500

Fire brigade microphone console with touchscreen, up to 36 selectable zones/alarm areas, applicable for clearing/evacuation functions, without microphone

- Up to 4 consoles connectable (2 × VA-FMCT or 4 × VA-FMC)
- Touchscreen (1–36 zone selection keys, 6 function keys)
- 1 Emergency button
- LED-Status display (monitoring functions)

Technical data

Connection	2 × RJ45 (In/Out)
Cable length	Max. 1'000 m
Power supply	24 V DC
Current consumption	165 mA
Operating temperature	5 °C to 40 °C
Dimensions (W × H × D)	230 × 80 × 200 mm (without microphone)
Weight	1,6 kg
Material, Colour	Plastic, dark grey

Accessories

VA-MG-001 Dynamic gooseneck microphone for VA-FMC/FMCT		63-1111437-01-01
VA-MH-001 Dynamic hand-held microphone for VA-FMC/FMCT		63-1111438-01-01
VA-BOX-FMC Metal housing for VA-FMC/FMCT (flush-mount)		63-1111436-01-01

Dynamic goosneck microphone for VA-FMC / VA-FMCT — 63-1111437-01-01

VA-MG-001

Gooseneck microphone for the consoles VA-FMC and VA-FMCT

- With socket XLR, 3-pole

Technical data

Microphone	Dynamic
Microphone connection	XLR, 3-pole

Version

VA-MH-001 — 63-1111438-01-01
Hand-held microphone for the consoles VA-FMC and VA-FMCT
- With spiral cable and socket XLR, 3-pole

CE

Metal housing for VA-FMC- / FMCT — 63-1111436-01-01

VA-BOX-FMC

Metal housing for the installation of VA-FMC and VA-FMCT consoles

- Surface-mounted

Technical data

Dimensions (W × H × D)	370 × 320 × 145 mm (without microphone)
Weight	5,8 kg
Material, Colour	Metall, red

CE

Scope of delivery:
Housing with triangular lock, without installation material

Important notes:
The VA-FMC or VA-FMCT consoles including VA-MH-001 hand-held microphone can be built into the housing.

An alternative cylinder must be ordered directly by the operator from a corresponding supplier after approval by the fire brigade!

2.4 APS®-APROSYS Voice Alarm Systems

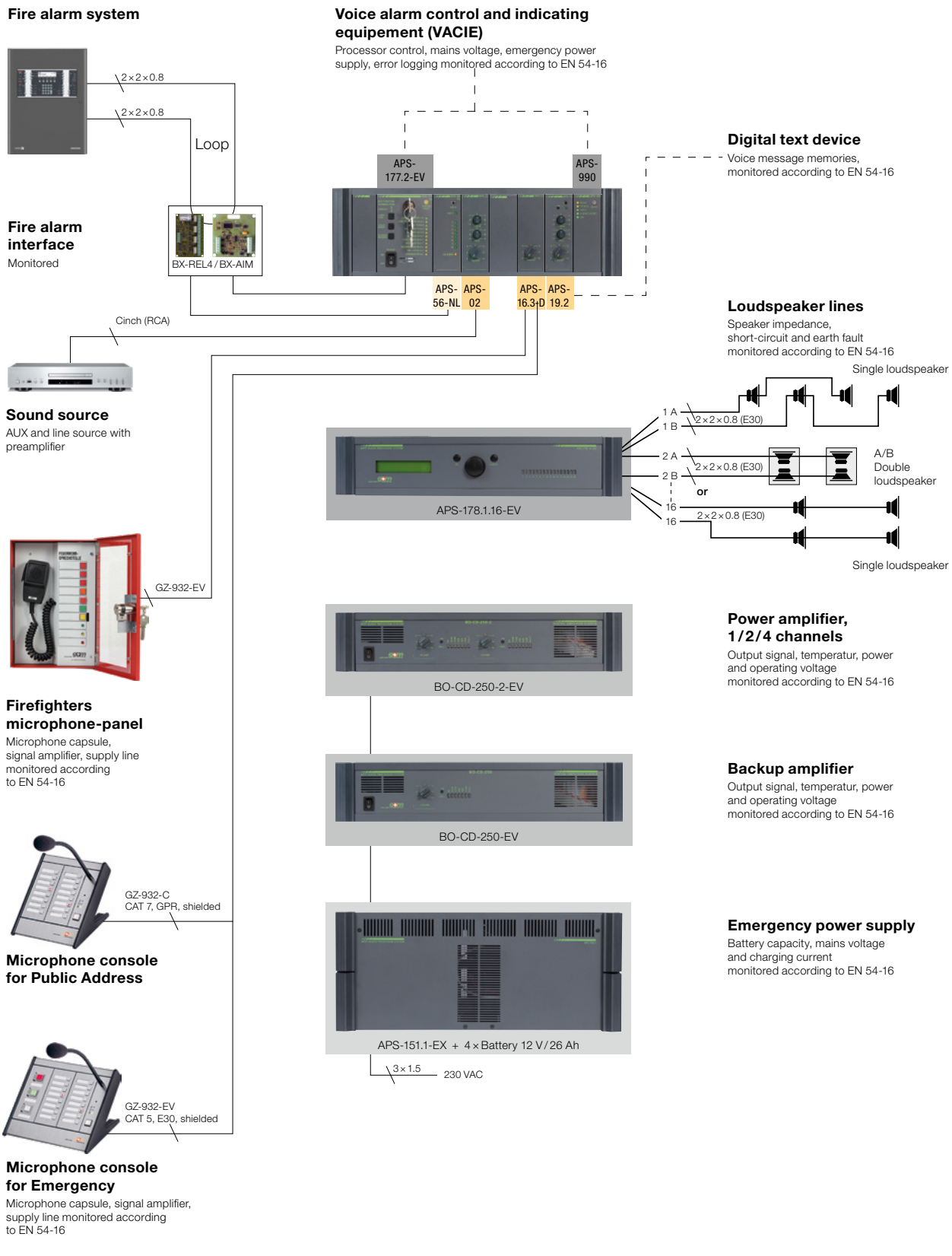
Basic configuration accordig to typical VACIE

The modular Voice Alarm System APS®-APROSYS can be structured – simmilar to the typical signal flow – simplified to input area, central and output area.

Input area
On the input side there are the components microphone unit, sound source or simple contact information, which are fed into the Voice Alarm Control System.

Central
Programming takes place in the central unit, analog and digital signals are logically linked and switched through to the outputs. It also communicates with the fire alarm control panel. The control panel also receives and supplies information to higher-level systems via networks, e.g. for visualising the system.

Output area
Output signals are amplified to the desired power by amplifiers and transmitted to loudspeakers via line monitoring components.


Fire alarm system
2×2×0.8
2×2×0.8
Loop
Fire alarm interface
Monitored
BX-REL4 / BX-AIM
Voice alarm control and indicating equipement (VACIE)
Processor control, mains voltage, emergency power supply, error logging monitored according to EN 54-16
APS-177.2-EV
APS-990
Digital text device
Voice message memories, monitored according to EN 54-16
APS-56-NL
APS-02
APS-16.3+D
APS-19.2
Cinch (RCA)
Sound source
AUX and line source with preamplifier
Loudspeaker lines
Speaker impedance, short-circuit and earth fault monitored according to EN 54-16
Single loudspeaker
1 A
1 B
2×2×0.8 (E30)
2 A
2 B
2×2×0.8 (E30)
A/B Double loudspeaker
or
16
16
2×2×0.8 (E30)
Single loudspeaker
APS-178.1.16-EV
GZ-932-EV
Firefighters microphone-panel
Microphone capsule, signal amplifier, supply line monitored according to EN 54-16
BO-CD-250-2-EV
Power amplifier, 1/2/4 channels
Output signal, temperatur, power and operating voltage monitored according to EN 54-16
BO-CD-250-EV
Backup amplifier
Output signal, temperatur, power and operating voltage monitored according to EN 54-16
GZ-932-C
CAT 7, GPR, shielded
Microphone console for Public Address
APS-151.1-EX + 4 × Battery 12 V / 26 Ah
Emergency power supply
Battery capacity, mains voltage and charging current monitored according to EN 54-16
3×1.5
230 VAC
GZ-932-EV
CAT 5, E30, shielded
Microphone console for Emergency
Microphone capsule, signal amplifier, supply line monitored according to EN 54-16

APS®-APROSYS System overview

The modular Voice Alarm System can be optimally adapted to a wide range of system requirements.
The APS®-APROSYS system can be divided into the following groups:

System/function modules
These modules compose the basic structure of the Voice Alarm System with function and control modules. Further modules extend the mandatory part of the VACIE and offer further useful functions.

Input/output modules, signal sources
With these modules, audio signals are connected to the voice alarm control panel and the playback and volume of the audio signals can be influenced.

Interface modules
These modules are used to link the Voice Alarm System and the fire alarm control panel.

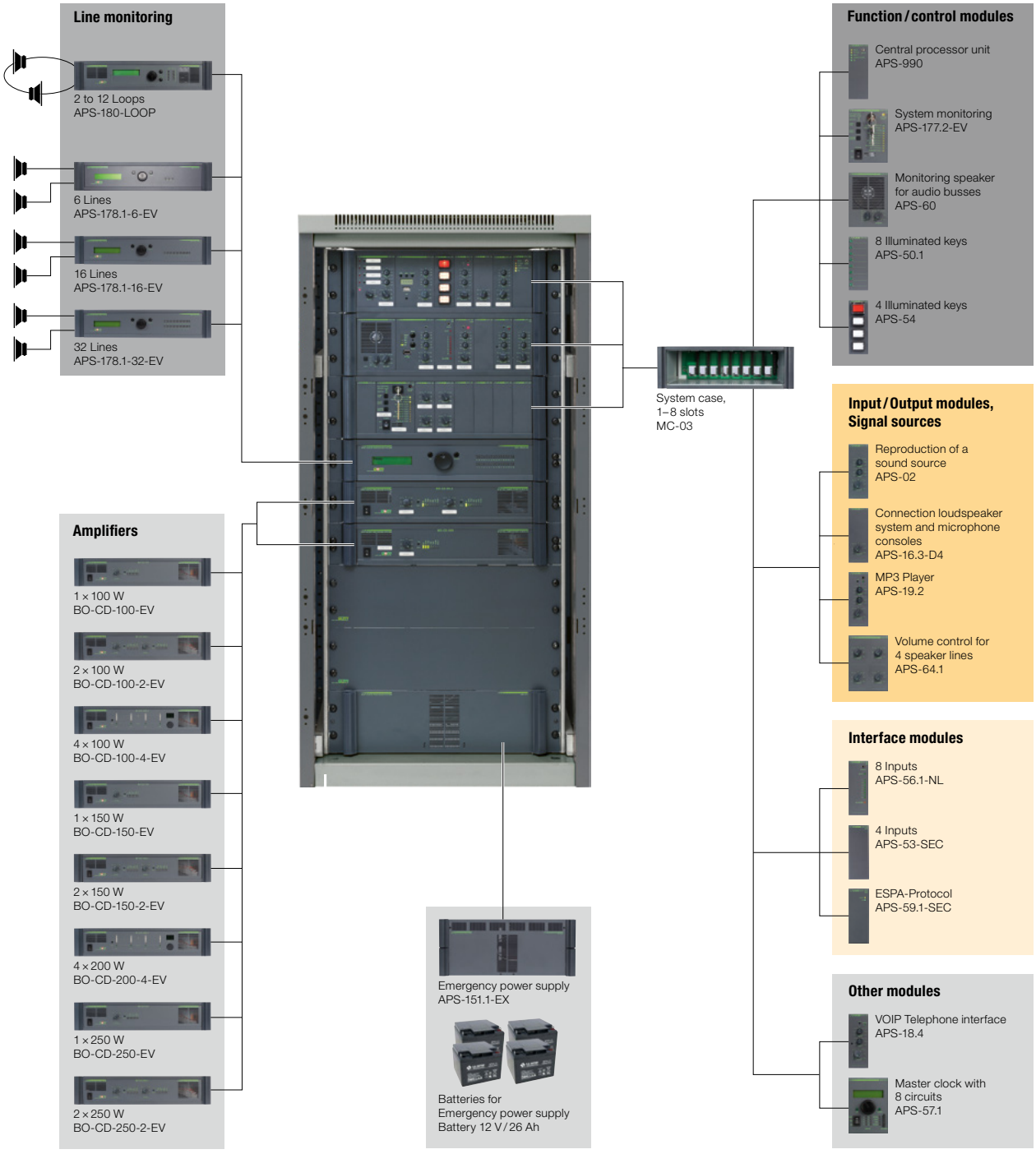
Line monitoring
These modules monitor the connected speaker lines.

Amplifier
These amplifiers provide the power for sound reinforcement via loudspeakers.

Emergency power supply
These components ensure Voice Alarm System (VACIE) operation in the event of a mains power failure.

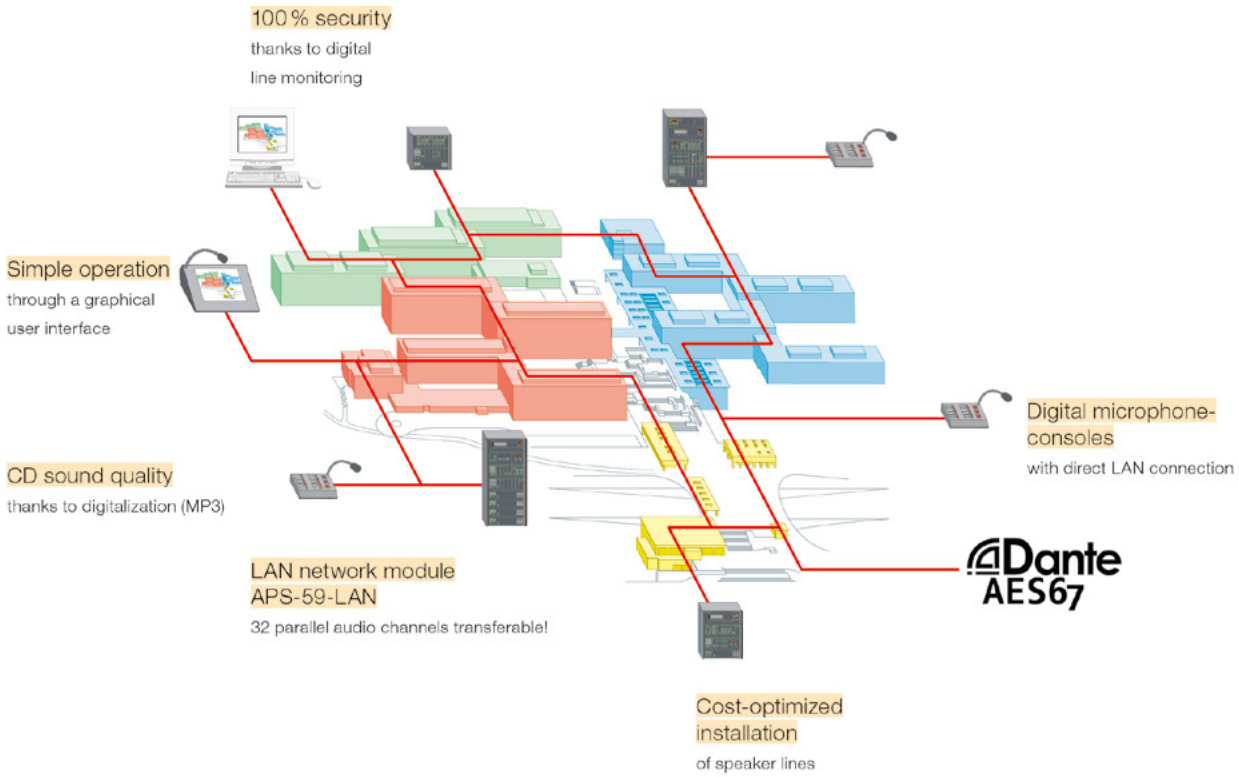
System housing
19" frames enclose the individual function modules and connect them with each other.

Rack
Most VACIE systems are installed in a system rack and are available in various sizes.


Line monitoring
2 to 12 Loops
APS-180-LOOP
6 Lines
APS-178.1-6-EV
16 Lines
APS-178.1-16-EV
32 Lines
APS-178.1-32-EV
Amplifiers
1 x 100 W
BO-CD-100-EV
2 x 100 W
BO-CD-100-2-EV
4 x 100 W
BO-CD-100-4-EV
1 x 150 W
BO-CD-150-EV
2 x 150 W
BO-CD-150-2-EV
4 x 200 W
BO-CD-200-4-EV
1 x 250 W
BO-CD-250-EV
2 x 250 W
BO-CD-250-2-EV
System case,
1–8 slots
MC-03
Emergency power supply
APS-151.1-EX
Batteries for
Emergency power supply
Battery 12 V / 26 Ah
Function / control modules
Central processor unit
APS-990
System monitoring
APS-177.2-EV
Monitoring speaker
for audio busses
APS-60
8 Illuminated keys
APS-50.1
4 Illuminated keys
APS-54
Input / Output modules,
Signal sources
Reproduction of a
sound source
APS-02
Connection loudspeaker
system and microphone
consoles
APS-16.3-D4
MP3 Player
APS-19.2
Volume control for
4 speaker lines
APS-64.1
Interface modules
8 Inputs
APS-56.1-NL
4 Inputs
APS-53-SEC
ESPA-Protocol
APS-59.1-SEC
Other modules
VOIP Telephone interface
APS-18.4
Master clock with
8 circuits
APS-57.1

2.4.1 Networking of Voice Alarm Systems

With a graphical user interface via touch screen, integration into a building management system is possible. The existing software interfaces ensure smooth integration into building management system Network; with LAN via RS232/RC16 bus connection or with the GM-7429-BRIDGE into an already existing building management system. The subsystems are linked together, using real-time audio transmission according to the AES67 standard.



You can also expand the system on demand at any time using standard network components. Ongoing digital monitoring of networks increases your system's security.

In addition, take advantage of the option of connecting to redundant fibre glass cables, thereby minimizing the risk of failure of your overall system.

2.4.2 System modules

The chapter System modules contains the basic components for setting up the APS®-APROSYS Voice Alarm System. A variety of modules is available for individual solutions.
The preconfigured basic system APS-FLEX-XX combines components, programming and accessories that are generally required under one article number. The modules used and their scope of delivery are described in detail on the following pages. The basic system can also be combined with other APS®-APROSYS components.

Preconfigured basic system, ready-to-use — 63-1410785-01-01

APS-FLEX-16

**The APS-FLEX is a ready-to-use, preconfigured system with all important components from the APS®-APROSYS system family.
Suitable for mid-sized Voice Alarm Systems and can be extended at any time.**

- 2 × 250 W plus 250 W Backup
- Monitored interface to the Fire Alarm System (FAS)
- Music input
- Interface for 16 digital microphone consoles
- Progr. mic. console, monitored voice call point, 16 buttons plus 3 covered alarm buttons
- Freely programmable, monitored alarm memory for 30 alarms
- Error memory can be retrieved with date stamp, emergency power supply

Norm EN 54-16
CE

Scope of delivery:
Preconfigured basic system, ready-to-use, inclusive accessories

Technical data

Power	230 VAC +/-10 %, 50/60 Hz
Nominal Power	990 VA
Nominal Power	4.5 A
Idle power	96 VA
Standby time witout net	30 h / Full load operation time: 30 min
Battery capacity	48 V/24 Ah
Output/Zones	16 × 100 V/250 W max. per linie
Total output	2 × 250 W plus 250 W Backup
Input FAS	8 × External, monitored inputs
Input microphone console XLR	600 Ohm sym., 0 dBm/Digital
Input Music CINCH	47 kOhm asym., -10 dBm
Dimensions (W × H × D)	425 × 572 × 340 mm (13 U)
Weight	67.5 kg

Version

APS-FLEX-32 — 63-1410816-01-01
Preconfigured basic system

Product features like APS-FLEX-16, but:
- 32× 100 V Output/Zones
- 3× 250 W plus 250 W Backup Total output
- Mic. consol with 24 buttons plus 3
- Dim.: 425 × 720 × 340 mm (17 U)
- Weight: 72.5 kg

Case 19" with 8 slots — 63-1201452-01-01

Standard EN 54-16
CE

MC-03

Case for the insertion of APS®-APROSYS modules

- As stand-alone device or for installation in a cabinet (Mounting brackets 19" optional)
- 2 sockets D-SUB-25 (BUS In/out) for the bus connection with other system casings
- LED data Indicator on rear side
- Internal power supply over system bus

Technical data

Power supply	17 V DC, via system BUS, cable on rear side
Current consumption	0,025 A, unbestückt
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (B × H × T)	435 × 134 × 320 mm
Weight	2,75 kg
Surface front	Powder coated, dark grey

Accessories

Set Stapel — 63-5511429-01-01
Required for stacked construction
- Bracket, front connection
- Stacking part, rear connection
- Incl. mounting screws

Set-00 — 63-1211456-01-01
Blind plates, front and rear panel, for MC-03
- To cover unused slots

Master processor module for APS® systems — 63-1111480-01-01

APS-990

Programmable processor module for controlling an alarm centre according to plant-specific specifications. With integrated serial communication/programming interface

- Graphical programming via RS232 interface and access to other components in the system (modules, amplifiers and microphone consoles)
- Simple online diagnosis and remote maintenance
- Free programming of the 4 input and 4 output buses
- LED Status display
- Simultaneous announcement and playback of background music in different lines, groups or zones
- Management of digital and analog control inputs/outputs
- Management for connecting and controlling one or more digital speech memory modules (playback of digital audio files)
- Remote control via microphone units, touch panels and external operating units
- Internal power supply via system BUS board

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-00

Technical data

Frequency range	20–20'000 Hz
Socket Jack	3,5 mm Stereo (RS232)
Power supply	17 V DC, via system BUS, cable on rear side
Current consumption	0,09 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 subunit × 3 U
Weight	0,55 kg
Surface front	Powder coated, dark grey

Version

APS-990-EQ — 63-1111481-01-01
Master processor module
APS-990 for EQ functions

Product features such as
APS-990
- Required when using the function module APS-46.1-EQ-RC

2.4.3 Input modules

Input modules connect external audio sources, e.g. call stations, microphones, audio players, telephone interfaces, etc. to the voice alarm control panel. Its primary task is to convert different connection types, signal levels or digital information into a signal format that can be processed by the processor. Remote controls are also integrated via input modules.

Overview

Type	Range of application	Page
APS-01 APS-01-EV APS-02 APS-03	Connection of audio sources: - Universal input module - Universal input module, monitored - Connection of a music source, with recording facility - Connection of loudspeaker signals (0,3 to 100 V)	 51 52 53 54
APS-04.1	Connection of remote audio source inputs, e.g. APS-440	55
APS-10.1 APS-10.2	Connection of microphones and music sources with remote volume control: - Analogue - RC16-Bus	 56 57
APS-11-4	Connection up to 4 audio sources, Presettings through saved configuration, Volume remote control via RC16 bus and APS® system	58
APS-12.1	Input module with audio signal detection	59
APS-16.3-D2	Connection of digital microphone consoles with 2 monitored connections	60
APS-16.3-D4	Connection of digital microphone consoles 4 monitored MC LINK (RJ45) connections	61
APS-18.3 APS-18.4	Connection of telephone sets - Analogue devices - Digital devices (VOIP)	 62 63
APS-40.1	Connection of up to 4 audio signals, selector switch for audio source, with controls for volume, treble and bass	64

Universal input module microphone and AUX signals 63-1103107-01-01

APS-01

Input module for connecting microphones and music devices

- Processor-controlled interface module for microphone consoles, microphones and AUX sources
- Phantom power for condenser microphones
- Removable operating knobs for protection against manipulation
- Integrated, programmable matrix function for switching the external signal to the the APS system bus
- Potential-free contact input for programming a function (DIN 5-pin socket)

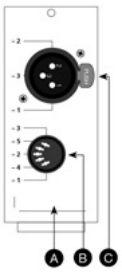
Technical data

Input	Symmetric input
Input sensitivity	-63 dBm Microphone without phantom power -53 dBm Microphone with phantom power -10 dBm AUX input without phantom power 0 dBm Line input without phantom power
Phantom power	12 VDC
Input impedance	200 Ohm
Connection (external)	Socket XLR 3-pole, symmetric, Socket DIN, asymmetric
Power supply	17 VDC over system BUS
Current consumption	0,05 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,35 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-01



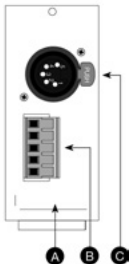
A Input label
B Socket DIN 5 pole
C Socket XLR 3 pole

Universal input module microphone, monitored 63-1106395-01-01

Norm EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-01-EV



A Input label
B Socket 5 pole
C Socket XLR 6 pole

APS-01-EV

Input module for connecting dynamic microphones

- Processor controlled interface module for microphones
- Removable operating knobs for protection against manipulation
- Integrated, programmable matrix function for switching the external signal to the the APS system bus
- Potential-free contact input for programming a function

Technical data

Input	Symmetrical input
Connection (external)	Socket XLR 6-pole, symmetric
Power supply	17 VDC over System BUS
Current consumption	0,05 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,35 kg
Surface front	Powder coated, dark grey

Input module for sound source, with recording option 63-1103108-01-01

APS-02

Input module for the connection of a sound source, with recording option

- Programmable recording output
- Removable operating knobs for protection against manipulation
- Integrated, programmable matrix function for switching the external signal to the the APS system bus
- Connection (Input/Recording) asymmetric, Socket Cinch

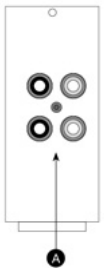
Technical data

Connections	Asymmetric
Input sensitivity	-10 dBm (245 mV)
Input impedance	47 kOhm
Ausgangspegel (Aufnahme)	-10 dBm (245 mV)
Power supply	17 VDC over System BUS
Current consumption	0,05 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,526 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-02-01



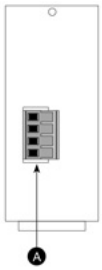
A Socket Cinch

Input module with LF transformator 63-1103109-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-03



A Connector block

APS-03

Input interface for connecting audio signals with a voltage of 0,3 to 100 volts. Integrated transformer unit for galvanic isolation of the signals

- Switching on/off of the amplifier central and/or priority and priority switching possible
- Removable operating knobs for protection against manipulation
- Integrated, programmable matrix function for switching the external signal to the the APS system bus
- Potential-free contact input for programming a function

Technical data

Input	Transformer balanced input
Input sensitivity	-2 dBm to 45,5 dBm (adjustable)
Input impedance	600 Ohm
Connection (external)	Symmetric, connector block
Power supply	17 VDC over System BUS
Current consumption	0,1 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,541 kg
Surface front	Powder coated, dark grey

Input module for remote controls — 63-1103110-01-01

APS-04.1

Input interface for external remote controls, for connection of the remote control units APS-44x

- Maximum volume and pre-amplification (gain) at the module individually adjustable
- Removable operating knobs for protection against manipulation
- Maximum volume and pre-amplification (gain) at the module individually adjustable
- Integrated, programmable matrix function for switching the external signal to the the APS system bus
- Potential-free contact input for activating a programmable function from APS-44x

Technical data

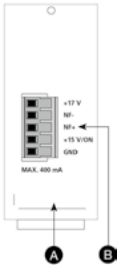
Input	LF Input, symmetric, APS-44x
Frequency response	20–20.000 Hz
Input sensitivity	0 dBm (0,8 V)
Input impedance	600 Ohm
Power output (external)	15 VDC (for remote controls)
Power supply	17 VDC over System BUS
Current consumption	0,1 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,531 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Remote controls see chapter 3.2

Rear panel RWS-04



A Label
B Connector block

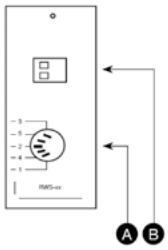
Input module microphone/sound source with analogue remote control

63-1107809-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-10.1



A Socket DIN 5-pole
B Connector block

APS-10.1

Input module for wired analog remote volume control for playback of a sound source (e.g. microphone, music device, line)

- Wired digital volume control
- Removable operating knobs for protection against manipulation

Technical data

Input	Symmetric/asymmetric
Input sensitivity: - Microphone dynamic - Condenser microphone - Wireless microphone - Music source/AUX - Line	 -63 dBm (without Phantom power) -53 dBm (with Phantom power) -37 dBm -10 dBm 0 dBm
Phantom power	12 V DC
Input impedance	200 Ohm, Microphone 47 kOhm, AUX/Line
Power supply	17 VDC over System BUS
Current consumption	0,05 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,4 kg
Surface front	Powder coated, dark grey

Input module microphone/sound source with digital remote control

63-1110143-01-01

APS-10.2

Input module for wired digital remote volume control for playback of a sound source. Connection via RC16 bus

- Wired remote volume control via RC16 participants
- Removable operating knobs for protection against manipulation
- Level adjustment to the sound source (sensitivity/input impedance)
- RC16-Bus, Device number (ID) and channel
- High pass filter 120 Hz/12 dB (subsonic filter, proximity effect)
- Audio source on/off via potential-free contact

Standard EN 54-16

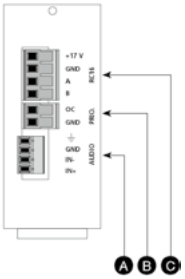
CE

Scope of delivery:
Module including rear panel

Technical data

Input	Symmetric
Input sensitivity: - Microphone dynamic - Condenser microphone - Wireless microphone - Music source/AUX - Line	 -63 dBm (without Phantom power) -53 dBm (with Phantom power) -37 dBm/-43 dBm -10/-20 dBm 0 dBm
Phantom power	12 V DC
Input impedance	200 Ohm, Microphone 47 kOhm, AUX/Line
Power supply	17 VDC over System BUS
Current consumption	0,03 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,62 kg
Surface front	Powder coated, dark grey

Rear panel RWS-10.2



A Connector for LF signal
B Connector for priority contact
C Connector for remote control (RC16 Bus)

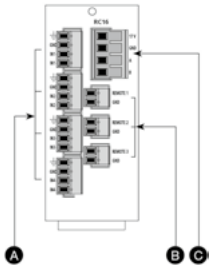
Input module with DSP function, 4-channels — 63-1110747-01-01

Standard EN 54-16
CE

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

Scope of delivery:
Module including rear panel RWS-11.4 and RWS-00

Rear panel RWS-11.4



A Connector block for LF signal
B Connector block for priority contact
C Connector for remote control bus RC16

Rear panel RWS-00

APS-11-4

DSP input module with 4 selectable audio or microphone inputs. Microphone settings can be adjusted with pre-saved parameters

- The DSP processor controls the input busses (M1 to M4)
- Programmable configuration
- Separate use of equalizer, delay, volume control and 2-point dynamics (expander, compressor or limiter) for each bus in 16 different programmable presets
- Possible DSP functions per channel:
  - Delay (122 ms can be divided between all 4 channels)
  - Equalizer (10 fully parametric bands, ±12 dB)
  - 2 volume levels switchable: volume, shadow volume (-100 dB to +6 dB)
  - 2-point dynamics (expander, compressor noise gate)
- Dimmable display
- 16 Presets, switchable
- LED indicator (pre/postfader, clipping warning)
- Real time modus for local parameters setup
- Digital remote control of functions up to 15 control points (optional) via RC16 bus (RS-485)

Technical data

Reference level	0 dBm
Interface	RS232 (Socket Jack 3,5 mm)
Power supply	17 VDC over System bus
Current consumption	0,4 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,42 kg
Surface front	Powder coated, dark grey

Options

Additional board for connection of remote control APS-44x	63-4110910-01-01
Adapter for accepting galvanically isolated 100 V signal	63-4110930-01-01

Input module wirh audio signal detection microphone/sound source

63-1107568-01-01

APS-12.1

Interface module for modulation controlled audio input with programmable priority function

- Connection of AUX and LF sources
- Connection of dynamic or wireless microphones and condenser microphones
- Audio signal detection, signal recognition executes programmable functions
- Response level, response delay, release delay, duration and gain programmable via system software
- High-pass and low-pass filters
- Voice-Over Function, fade out or reduce signal by up to 20 dB
- Removable operating knobs for protection against manipulation
- Digital contact input for control functions

Standard EN 54-16

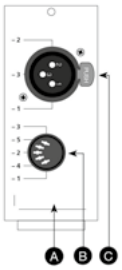
CE

Scope of delivery:
Module including rear panel

Technical data

Input	Symmetric
Input sensitivity : - Microphone dynamic - Condenser microphone - Wireless microphone - Music source/AUX - Line	 -63 dBm (without Phantom power) -53 dBm (with Phantom power) -37 dBm -10 dBm 0 dBm
Input impedance	600 Ohm
Power supply	17 VDC over System bus
Current consumption	0,05 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,45 kg
Surface front	Powder coated, dark grey

Rear panel RWS-01



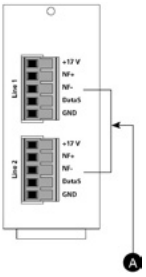
A Input label
B Socket DIN 5 pole
C Socket XLR 3 pole

Input module for digital microphone consoles 63-1111803-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-16.3-D



A Connector block

APS-16.3-D2

Module for digital microphone consoles with 2 monitored MC LINK connections

- Monitoring of digital microphone consoles, according to standard EN 54-16 for evacuation systems
- Bidirectional data communication, distance up to 1'000 m
- 2 individually monitored data lines
- Separation of data lines in case of short circuit/overcurrent
- Removable operating knob for protection against manipulation

Technical data

Input	Symmetric
Input sensitivity	775 mV
Input impedance	600 Ohm
Power supply	17 VDC over System bus
Current consumption	0,400 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,54 kg
Surface front	Powder coated, dark grey

Input module for digital microphone consoles 63-1111446-01-01

APS-16.3-D4

Module for digital microphone consoles with 4 monitored MC LINK (RJ45) connections

- Monitoring of digital microphone consoles, according to standard EN 54-16 for evacuation systems
- Bidirectional data communication, distance up to 1'000 m
- 4 individually monitored data lines
- Separation of data lines in case of short circuit / overcurrent
- Removable operating knob for protection against manipulation

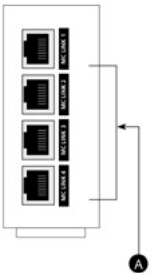
Technical data

Input	Symmetric
Input sensitivity	775 mV
Input impedance	600 Ohm
Power supply	17 VDC over System bus
Current consumption	0,400 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,54 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-16.3-D4



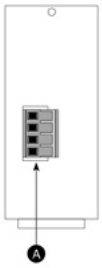
A Socket MC LINK (RJ45)

Input module for analogue telephone line — 63-1109033-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-03



A Connector block

APS-18.3

Telephone interface module for calls and announcements via trunk lines. Analog telephone line with audio frequency dialling

- Direct playback of announcements (with/without function selection)
- Listening to the program on the phone
- Information transfer to a designated telephone number
- Programmable exchange line separation
- Offset announcement playback for noise suppression
- Self-learning busy tone detection
- Function dialling via telephone keypad
- Removable operating knobs for protection against manipulation

Technical data

Input	Transformer symmetric
Input sensitivity	-10 dBm
Input impedance	600 Ohm
Cache memory	Max. 4 calls
Memory capacity	15 min
Power supply	17 VDC over System bus
Current consumption	0,100 A
Current consumption (telephone line)	Inactive: 0 A Active: 0,03 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,432 kg
Surface front	Powder coated, dark grey

Input module for digital telephone line (VOIP) 63-1110748-01-01

APS-18.4

Interface module for the connection of a loudspeaker system to the telephone installation

- Announcement from telephone to loudspeaker system
- Interface module for individual and collective calls from telephone keypad
- Automatic busy tone detection
- Programmable authorization recognition
- Up to 9 menu items programmable
- LAN-based device with built-in PC operating system Linux
- Function dialling with telephone keypad according to menu guidance
- Listening to the programme of the installation
- Configuration of the module via Internet browser (GUI)
- Removable operating knobs for protection against manipulation
- SIP protocoll

Technical data

Memory capacity	8 GB (flash card)
Programming	Via PC
Display	5 LED
Power supply	17 VDC over System bus
Power consumption	5,1 W
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,690 kg
Surface front	Powder coated, dark grey

Standard EN 54-16

CE

Scope of delivery:
Module including rear panel RWS-91.2 and RWS-59-LAN

Rear panel RWS-91.2

A Ventilation slots

Rear panel RWS-59-LAN

A Socket RJ45

Input module program selection for 4 sound sources 63-1108883-01-01

APS-40.1

Program selection module with 4 audio channels for playback/recording of internal and external audio sources

- Distribution of signals to 4 NF buses in the system, programmable with recording function for all NF buses
- Audio connection audio source with the input busses (M1–M4)
- Audio connection recording outputs with the output busses (BF1–BF4)
- Controls: volume, treble, bass, input signal level (gain)

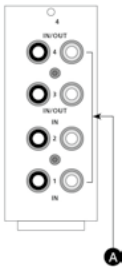
Standard EN 54-16
CE

Scope of delivery:
Module including rear panel RWS-40.1 and RWS-00

Technical data

Connection (Input)	Asymmetric, 4× Cinch (Stereo)
Frequency range NF	20–20'000 Hz
Input sensitivity	-10 dBm (245 mV)
Input impedance	47 kOhm
Output level for recording	-10 dBm (245 mV)
Power supply	17 VDC over System bus
Current consumption	0,12 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,65 kg
Surface front	Powder coated, dark grey

Rear panel RWS-40.1



A Sockets Cinch for input/output 1–4

Rear panel RWS-00

2.4.4 Output modules

Output modules convert the digital audio information from the processor unit into analog signals. These analog signals are then fed to the amplifiers and line monitoring. The loudspeakers are connected to the amplifiers or line monitoring.

Output modules for switching functions (relay modules) enable the switching of different control voltages.

Overview

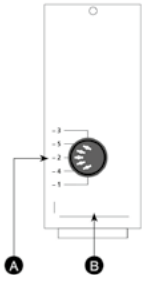
Type	Range of application	Page
	Output module	
APS-30.1	- 0 dBm Signal output for forwarding to e.g. amplifier	66
APS-31.2	- +6 dBm output for forwarding to e.g. amplifier incl. control knobs for volume, bass and treble	67
APS-33-4	- 4 channel DSP with RC16-Bus	68
APS-34-IND	- Output module for Induction loop amplifier	69
	Output module with volume control knob	
APS-62.1	- 2 × 100 V loudspeaker lines, switchable	70
APS-64.1	- 4 × 100 V loudspeaker lines, switchable	70
	Output modul	
APS-74.1	- Loudspeaker lines, switchable, without control elements	71
	Relay modules	
APS-75-SPEZ	- 4 switching contacts, power relays	72
APS-75	- Universal relay module (4 relays)	73

Output module, 0 dB signal — 63-1108357-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-02



A Socket DIN
B Output label

APS-30.1

Autonomous output for signal transmission to audio components

- Decoupling internal system bus audio signals
- Automatic switch-on delay to avoid switch-on noises
- Without control elements

Technical data

Connection	Symmetric or asymmetric
Output level	0 dBm (0,8 V)
Output impedance	150 Ohm
Output impedance	Open collector 17 V/300 mA
Power supply	17 VDC over System bus
Current consumption	0,070 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,395 kg
Surface front	Powder coated, dark grey

Output module with control functions, +6 dBm signal — 63-1107864-01-01

APS-31.2

Adjustable output for signal transmission to audio components.
Operating knobs for volume, treble and bass

- Decoupling internal system bus audio signals
- Automatic switch-on delay to avoid switch-on noises
- Operating knobs for volume, treble and bass
- Level indicator

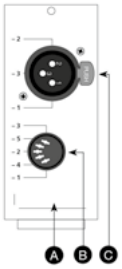
Technical data

Connection	Symmetric or asymmetric
Output level	+6 dBm (1,5 V)
Output impedance	150 Ohm
Output impedance	Open collector 17 V/300 mA
Power supply	17 VDC over System bus
Current consumption	0,070 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,5 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-01



A Input label
B Socket DIN 5 pole
C Socket XLR 3 pole

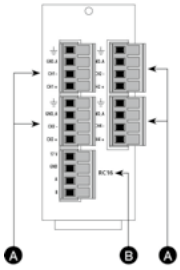
Output module with DSP functions, 4-channels 63-1109395-01-01

Standard EN 54-16
CE

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

Scope of delivery:
Module including rear panel RWS-46.1 and RWS-00

Rear panel RWS-46.1



A Connector block for symmetrical audio output 1–4
B Connector block for remote control bus RC16

Rear panel RWS-00

APS-33-4

4-channel digital processing module (DSP), LF outputs

- Input signals from NF output bus (BF1 to BF4)
- Output signals (after processing) from output terminals
- Programmable module configuration
- Separate use of functions for each bus: Equalizer, delay, ambient noise, control and 2-point dynamics (expander, compressor or limiter) in 16 differently programmable presets per channel
- 16 presets switchable, display of preset number on the module front
- Possible DSP functions per channel:
  - Delay (122 ms can be divided between all 4 channels)
  - Equalizer (10 fully parametric bands, ± 12 dB)
  - 2 volume levels switchable: volume, shadow volume (-100 dB to +6 dB)
  - 2-point dynamics (expander, compressor noise gate)
- Delay: 0 to 40 m (3 to 122 ms), temperature-compensated
- Level display on front panel
- Real time modus for local parameters setup
- Digital remote control of functions up to 15 control points (optional) via RC16 bus (RS-485)

Technical data

Reference level	0 dBm
Interface	RS232 (Socket Jack 3,5 mm)
Power supply	17 VDC over System bus
Current consumption	0,16 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,65 kg
Surface front	Powder coated, dark grey

Output module for induction loop amplifiers — 63-1110108-01-01

APS-34-IND

Output module, 1 channel, for induction loop amplifier BO-CD-155

- Decoupling internal system bus audio sign
- Generating of 2 output signals phase-shifted by 90 degrees over the entire frequency range
- Equalizer, 10 fully parametric bands, ± 12 dB
- Level display normal and overloaded
- Parameter settings over the software

Technical data

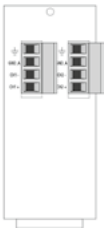
Signal-to-noise ratio	> 80 dB
Channels	1
Power supply	17 VDC over System bus
Current consumption	0,160 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,5 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

The module allows a phase shift of the audio signal. At least two induction loop amplifiers must be provided in the application

Scope of delivery:
Module including rear panel

Rear panel RWS-34-IND



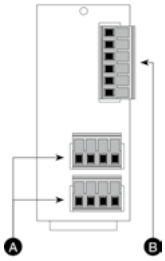
Output module for 2 speaker lines — 63-1108122-01-01

Standard EN 54-16
CE

Volume control 100 V (see chapter 3)

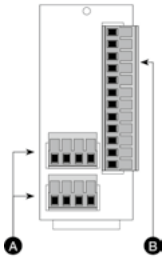
Scope of delivery:
Module including rear panel

Rear panel RWS-62



A Input from the amplifier and output for extension
B Connector block for loudspeaker lines

Rear panel RWS-64



A Input from the amplifier and output for extensions
B Connector block for the loudspeaker lines

APS-62.1

Adjustable output module for 2 separate 100 V loudspeaker lines, for cascading further modules

- 1 Input from amplifier / 2 group outputs
- On / Off and individual volume control
- Program-controlled bridging of externally installed volume controls in 3-wire technology
- 2 line relays
- Removable operating knobs for protection against manipulation

Technical data

Input (exteral)	100 Volt
Output (regulated)	2 × 100 Volt
Control	2 volume control
Steps	0–10
Line load	250 Watt (sum of all lines)
Fuse	3,15 A (F)
Power supply	17 VDC over System BUS
Current consumption	0,180 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,80 kg
Surface front	Powder coated, dark grey

Version

APS-64.1 — 63-1108187-01-01
Adjustable output module for 4 separate 100 V loudspeaker lines, for cascading further modules

Product features such as APS-62.1, but:
- Output: 4 × 100 W
- Control: 4 volume control
- 4 group outputs
- 4 line relays
- 4 priority relay (internal)
- 4 priority relay (external)
- With rear panel RWS-64 and RWS-00
- Weight: 0,95 kg

Autonomous output module for 4 speaker lines — 63-1108368-01-01

APS-74.1

Output module for 4 separate 100 V loudspeaker lines, for cascading further modules

- 1 Input from amplifier/4 group outputs
- Turning speaker lines on/off
- Program-controlled bridging of externally installed volume controls in 3-wire technology
- 4 line relays

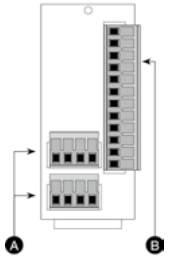
Technical data

Input (extern)	100 Volt
Output	4 × 100 Volt
Line load	250 Watt (sum of all lines)
Fuse	3,15 A (F)
Power supply	17 VDC over System bus
Current consumption	0,120 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,65 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-64



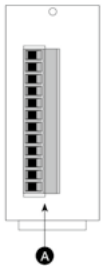
A Input from the amplifier and output for extension
B Connector block for the loudspeaker lines

Relay module with 4 switching contacts, power relay 63-1107320-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-75-SPEZ



A Connector block

APS-75-SPEZ

Switch module with 4 power relays (change-over contacts), function separately programmable

- Common power input, selectively switchable to 4 outputs, for controlling a wide range of loads

Technical data

Power Input	1
Control output	4
Max. switching voltage	30 VDC / 250 VAC
Max. switching current	8 A
Power supply	17 VDC over System bus
Current consumption	0,07 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,3 kg
Surface front	Powder coated, dark grey

Relay module with 4 switching contacts — 63-1103152-01-01

APS-75

Switch module with 4 power relays (change-over contacts), function separately programmable

- Potential-free control contacts, for the realisation of a wide variety of tasks
- No-load, normally open and change-over contacts available separately for each relay

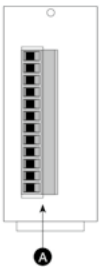
Technical data

Control relay	4
Max. contact load	1,5 A / 100 VDC (100 W)
Power supply	17 VDC over System bus
Current consumption	0,045 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,25 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-75



A Connector block

2.4.5 Signal source modules

Signal source modules provide pre-programmed texts and melodies – an FM tuner is also available under this heading. The signal sources are distributed to the outputs via the internal signal buses.

Overview

Type	Range of application	Page
APS-19.2	- MP3 Player	74
APS-24.2	- Digital message player	75
APS-25.2	- UKW tuner with RDS (Radio Data System)	76
APS-26	- USB Player	77

MP3 Player modul — 63-1107666-01-01

Standard EN 54-16
CE

Individual language texts are available on request

Scope of delivery:
Module including rear panel

APS-19.2

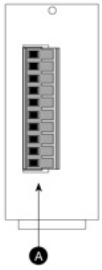
Playback of voice or gong melodies, siren signals and text files in MP3 format

- Memory capacity: 30 MP3 files, each 1 MB
- Programming: via RS232
- Controls: volume, treble, bass

Technical data

Connection (external)	Stereo socket 3,5 mm (RS232)
Power supply	17 VDC over System bus
Current consumption	0,12 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,5 kg
Surface front	Powder coated, dark grey

Rear panel RWS-51



A Connector block

Digital advertising text player module 63-1108999-01-01

APS-24.2

Digital text player module for time-controlled and manual playback of stored MP3 audio files

- Configuration of the module via Internet browser
- Single texts/text groups freely programmable (date/time/repetition)
- Pauses between texts programmable
- Manual triggering of stored audio files, e.g. via microphone console
- LED indication
- Controls: Volume, bass and treble
- Rear panel RWS-59-LAN for connection to PC
- Rear panel RWS-24.1 for connection of external power supply

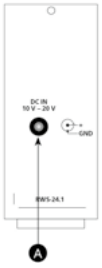
Technical data

Memory capacity	8 GB (Flash card)
Control	PC-based, Linux operating system
External power supply	10–20 VDC
Power consumption	5,1 W
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,690 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

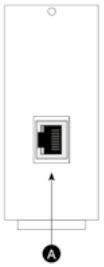
Scope of delivery:
Module including rear panels RWS-24.1 and RWS-59-LAN

Rear panel RWS-24.1



A External supply

Rear panel RWS-59-LAN



A Socket LAN

Signal source module FM tuner 63-1109356-01-01

APS-25.2

Module for playback of FM programmes. FM tuner module with alphanumeric LCD display, 50 station memories and RDS for displaying station name, artist and title

- Programmable volume (basic, RDS event 1 and 2)
- RDS evaluation for two different events for individual volume adjustment for news broadcasts or traffic announcements
- Station selection up/down via digital microphone station possible
- 6 Program shortcut keys
- Station memory for 50 stations

Standard EN 54-16

CE

Scope of delivery:
Module including rear panels RWS-25.2 and RWS-00

Technical data

FM tuner, frequency band	87,5–108,0 MHz
Sensitivity	25 dB
Distortion factor	0,2 %
Signal to noise ratio	72 dB
Control	Via software option/rotary knob/remote control (optional)
Display	LCD Display
Antenna connection	Coaxial, 75 Ohm
Power supply	17 VDC over System bus
Current consumption	0,060 A
Power consumption	5,1 W
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,46 kg
Surface front	Powder coated, dark grey

Rear panel RWS-25.2

A Connection for UKW antenna

Rear panel RWS-00

Signal source module USB-Player 63-1108628-01-01

APS-26

Module for playback of MP3 or WMA files from an external storage medium

- Built-in LCD, display of title number (001 to 999)
- Front operation for selection of the respective titles, forward/reverse/start/pause
- Includes IR remote control for direct track selection/random playback/repeat function
- Playback functions: endless, one track, all tracks, random
- Repeat function of several tracks
- USB port compatible with USB 1.1 or higher
- Status via LCD display

Standard EN 54-16

CE

Scope of delivery:
Module including rear panels (2×)
RWS-00 and IR remote vontrol

Rear panel RWS-00

Technical data

Output level (external)	0 dBm (0,8 V)
Frequency response	20–20'000 kHz
Distortion (THD)	< 0,3 % (1 kHz/0 dB)
Signal to noise ratio	> 70 dB
Power supply	17 VDC over System bus
Current consumption	0,17 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,49 kg
Surface front	Powder coated, dark grey

2.4.6 Function modules

Function modules serve to support and extend central tasks.

Overview

Type	Range of application	Page
APS-177.2-EV	- System monitoring	79
APS-46.1-EQ-RC	- 4-channel DSP, EQ	81
APS-46.1-CHURCH	- 4-channel DSP, EQ, especially for applications in churches	81
APS-50.1	- With 8 illuminated keys	82
APS-52	- With 8 external controls	83
APS-54.1	- With 4 illuminated keys, 4 inputs	84
APS-57.1	- Master clock with 8 circuits	85
APS-90.2	- 2 A internal power supply	86
APS-90.2-24V	- 2 A external power supply	87
APS-60	- Monitoring speaker for 4 LF busses	88
APS-61	- Monitoring speaker for 6 loudspeaker lines 100 V	89
APS-151.1-EX	- System housing for batteries	90
Battery 12 V/26 Ah		90

System monitoring module

63-1106951-01-01

APS-177.2-EV

Programmable monitoring module for complete and permanent system monitoring of modules and units, including the associated logging and alarm and fault messages forwarding in accordance with the standards EN 60849, NEN 2575, BS 5839, EN 54-2, EN 54-4 and EN 54-16

- Programming via main processor module APS-990
- Internal monitoring with error logging
- Permanent monitoring of all audio signals and signal paths in the entire Voice Alarm System
- Control, regulation and monitoring of backup switching in the amplifiers and emergency amplifiers of the system
- Monitoring of the digital microphone consoles connected via the input modules as well as fire brigade intercoms, the fire microphone management and the digital and analogue inputs
- Charge voltage and charge current monitoring of emergency power equipment in accordance with EN 54-4
- Voltage monitoring via mains socket
- Watchdog circuit with time-controlled logging process for all states and errors of the components (modules, amplifiers and microphone stations)
- Module front with status LED, operating keys, key switch and mains switch
- Enabling of the various access levels via a key switch in accordance with the requirements of standard EN 54-16 (Appendix A)

Technical data

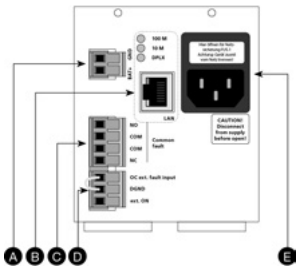
LAN-Interface	10/100 Mbit/s, socket RJ45 (optional)
Fault message output	Change-over contact (potential-free)
Power supply	17 VDC over System bus
Emergency power input	48 VAC or 24 VAC
Current consumption	0,327 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,7 kg
Surface front	Powder coated, dark grey

Standard EN 54-16

CE

Scope of delivery:
Module including rear panel and power cable

Rear panel RWS-177.2 or RWS-177.2-LAN



A Connector block for backup battery (48 VDC)
B LED and socket RJ45 for LAN (only APS-177.2-LAN)
C Connector block for common-fault
D Connector block for external fault-contact
E Main input socket with fuse and spare

Version

APS-177.2-EV-LAN Programmable monitoring module for complete and permanent system monitoring of modules and units, including the associated logging and alarm and fault messages in accordance with the standards EN 60849, NEN 2575, BS 5839, EN 54-2, EN 54-4 and EN 54-16 Product features such as APS-177.2-EV, but: - Monitoring of all LAN components in the system		63-1107226-01-01

Accessories

NETZKAB. 0.3 m Extension power cable, 0,25 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01

4-channel DSP module, EQ — 63-1109206-01-01

APS-46.1-EQ-RC

4-channel digital signal processor module for standard applications for connection of external NF channels

- Connects input busses directly or via a digital signal processor (DSP) to the output busses
- Programmable configuration
- Separate use of functions for each bus: equalizer, delay, 2-point dynamics (expander, compressor or limiter)
- 16 programmable presets, switchable; preset number shown on the display
- Two volume levels switchable: Volume, "shadow" volume (-100 dB to +6 dB)
- Equalizer, 10 fully parametric bands, ± 12 dB
- Level indication (bus 1–4)
- Real time modus for local parameters setup
- Digital remote control of functions to up to 15 control points (optional) via RS-485 data line

Standard EN 54-16

CE

When using this module, the APS-990-EQ must be used instead of APS-990

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

Scope of delivery:
Module including rear panel

Technical data

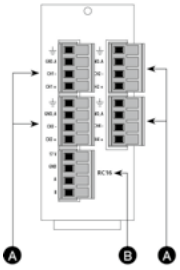
Reference level	0 dBm
Interface	RS232 (Socket 3,5 mm)
Power supply	17 VDC over System bus
Current consumption	0,16 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,42 kg
Surface front	Powder coated, dark grey

Version

APS-46.1-CHURCH — 63-1109367-01-01
4-channel DSP module, for churches.

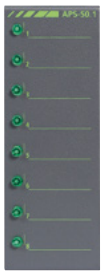
Product features such as APS-46.1-EQ-RC, but:
- Optimized for church applications
- Time delay (122 ms can be divided between all 4 channels)
- Weight 0,35 kg

Rear panel RWS-46.1



A Connector block for differential audio output
B Connector bock for remote control

Function module with 8 illuminated keys — 63-1109131-01-01



Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-00

APS-50.1

Interface module with 8 illuminated and individually labeled keys

- Function On/Off switch

Technical data

Power supply	17 VDC over System bus
Current consumption	0,012 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,4 kg
Surface front	Powder coated, dark grey

Function module for 8 external control contacts — 63-1103138-01-01

APS-52

Interface module for 8 external control contacts, for connecting push-buttons, switches, relays or other systems

- The function can be programmed for each contact input:
  as switch (on/off), as push-button (on/off) or as pulse contact
- A fused voltage output is available for the operation of indicator lights

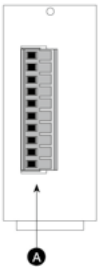
Technical data

Output voltage	17 VDC (supply control contact)
Power supply	17 VDC over System bus
Current consumption	0,022 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,467 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Rear panel RWS-51



A Connector block

Function module with 4 illuminated keys, 4 inputs — 63-1111066-01-01

Standard EN 54-16
CE

Further options: For example keys with protective cover or as key switch, on request

Scope of delivery:
Module including rear panel

APS-54.1

Function module with 4 illuminated, individually labeled keys and 4 external contact inputs

- Each key or contact can be programmed according to its mechanical function
- External contacts can also optionally take over the functions of the internal keys
- The integrated lights are activated when the key is pressed

Technical data

Output voltage	17 VDC (supply of the control inputs)
Power supply	17 VDC over System bus
Current consumption	0,054 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,52 kg
Surface front	Powder coated, dark grey

Rear panel RWS-00

Function module master clock with 8 circuits — 63-1110587-01-01

APS-57.1

Quartz-controlled programmable system clock with switching functions and slave clock control

- Module as master clock for controlling 50 analog or digital slave clocks with time code or pulse method
- Short-circuit-proof slave clock output, optionally in time code or minute pulse mode
- After a power failure, the slave clocks are set to the current time
- Synchronization via DCF or GPS receiver
- Automatic winter/summer time changeover
- LED display for activated circuits, DCF/GPS synchronization, slave clock pulse and errors
- Time-controlled main switch for PA control panels optionally activatable
- Programming via PC configuration software or menu navigation on LCD display
- Storage/modification of programming via SD card

Standard EN 54-16

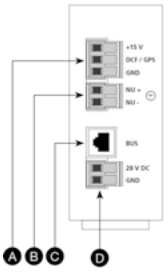
CE

Scope of delivery:
Module including rear panel RWS-57.1, RWS-00 and external power supply for slave clocks

Technical data

Voltage input	28–30 V DC
Backup-Battery	Lithium
Time memory	10 Years
SD-Card	FAT16/max. 4 GB
Circuits	8 binary contacts to the APS system
Number of switching times	500
Power supply	17 VDC over System bus
Current consumption	0,125 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	1,1 kg
Surface front	Powder coated, dark grey

Rear panel RWS-APS-57.1



A Connector block for DCF or GPS receivers
B Connector block for slave clocks
C RJ11 bus for future expansions
D Connector block for external power infeed

Rear panel RWS-00

Accessories

GM-122984-40 External radio receiver for master clock, DCF		63-1809560-01-01
GM-122985 Converter GPS-DCF for master clock		63-1808957-01-01

Power supply for slave clocks APS-57.1-PS

Version

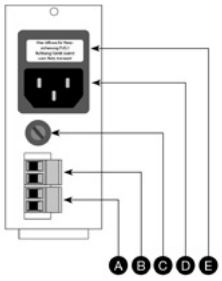
APS-57.1-TC Quartz-controlled programmable system clock with switching functions and slave clock control Product features such as APS-57.1, but: - RWS-57.1-TC, connected to the master clock APS-57.1 – running as a slave clock	63-1801442-01-01

Power supply module 2 A for internal supply 63-1108772-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel,
internal connecting cable (230 VAC)
and power cable (230 VAC)

Rear panel RWS-90



A Connector block for external remote switch
B Connector block for emergency power input
C Fuse for emeprgency power
D Main power input
E Main power fuse and replacement

APS-90.2

Universal power supply module for powering the components installed in the APS® system. For systems with low amplifier power or configurations without power amplifier

- Integrated into the emergency power supply
- Mains and battery voltage individually fused

Technical data

Mains supply (In)	230 VAC / 50 Hz
Mains connection	Connector according to IEC-60320 C14
Battery supply (In)	48 VDC
Output voltage	17 VDC over System bus
Maximum output current	2 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	1,0 kg
Surface front	Powder coated, dark grey

Accessories

NETZKAB. 0.3 m Extension power cable, 0,25 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01

Power supply module 2 A for external supply — 63-1108773-01-01

APS-90.2-24V

Universal power supply module for power supply in the APS® system or for DC supply of any external consumer (e.g. optical alarm devices etc.)

- Output voltage internally adjustable between 5 and 21 V DC
- Integrated into the emergency power supply
- Mains and battery voltage individually fused

Technical data

Mains supply (In)	230 VAC/50 Hz
Mains connection	Connector according to IEC-60320 C14
Battery supply (In)	48 VDC
Output voltage	24 VDC (for external components)
Maximum output current	2 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,8 kg
Surface front	Powder coated, dark grey

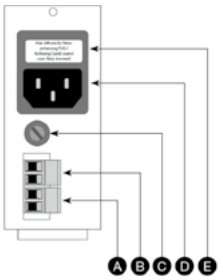
Standard EN 54-16
CE

Scope of delivery:
Module including rear panel,
internal connecting cable (230 VAC)
and power cable (230 VAC

Accessories

NETZKAB. 0.3 m Extension power cable, 0,25 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01

Rear panel RWS-90



A Output 21 V/2 A
B Connector block for emergency power input
C Fuse for emeprgency power
D Main power input
E Main power fuse and replacement

Function module control loudspeaker for 4 LF bus signals

63-1103145-01-01

Standard EN 54-16
CE

Scope of delivery:
Module including rear panels RWS-00 (2×)

Rear panel RWS-00

APS-60

Module for acoustic control of audio signals in the selected system bus

- Built-in control loudspeaker
- Operation via source selector switch, volume control and test button

Technical data

Loudspeaker	8 cm/3,3" Broadband speaker
Frequency range NF	150 Hz to 12 kHz
Output	6/2 Watt
Power supply	17 VDC over System bus
Current consumption	0,32 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	4 Subunits × 3 U
Weight	0,95 kg
Surface front	Powder coated, dark grey

Function module control loudspeaker for 6 loudspeaker lines 100 V

63-1103146-01-01

APS-61

Module for acoustic control of 100 V signals

- Built-in control loudspeaker
- Operation via source selector switch and volume control

Technical data

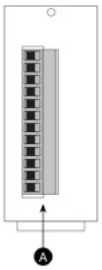
Input (extern)	6 × 100 Volt
Lautsprecher	8 cm/3,3" Broadband speaker
Frequency range NF	150 Hz to 12 kHz
Output	6/2 Watt
Power supply	17 VDC over System bus
Current consumption	0,32 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	4 Subunits × 3 U
Weight	0,95 kg
Surface front	Powder coated, dark grey

Standard EN 54-16

CE

Scope of delivery:
Module including rear panels RWS 61 and RWS-00

Rear panel RWS-61



A Connector block

Rear panel RWS-00

System housing 19" for emergency power supply — 63-1210447-01-01

Standard EN 54-4:2007
EN 54-16:2018 (in the system)

CE

The emergency power management is carried out by the APS® system

4 batteries (12 V, 26 Ah, optional) per APS-151 required

Scope of delivery:
System housing incl. mounting bracket

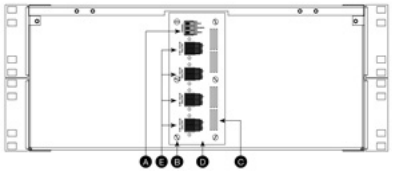
APS-151.1-EX

Housing for the accommodation and wiring of the batteries, with integrated temperature sensor and safety elements. In conjunction with amplifier and monitoring module, the emergency power management for ENS and SAA required by the standard is implemented

Technical data

Emergency power supply	48 VDC
Connection / output (48 V DC)	4 pcs, connector blocks
Current consumption	0,375 A to max. 4,610 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 178 × 380 mm
Weight	4,75 kg
Surface front	Powder coated, dark grey

Rear panel APS-151.1-EX



A Connector block for the temperature sensor
B Fixing screws (6×) for connecting plate
C Ventilation grill
D Connecting plate
E Connection for batteries

Battery for emergency power supply 12 V / 26 Ah — 63-5300059-01-01

4 batteries are required for APS-151.1-EX

Scope of delivery:
Battery 12 V / 26 Ah, including fixing material for battery cable connection

Akku 12 V / 26 Ah

Battery for emergency power supply in a APS® system

- Including fixing material (two M5 screws with nuts) for battery cable connection

Technical data

Connection battery cable	Screw M5
Dimensions (W × H × D)	175 × 125 × 166 mm
Weight	9,4 kg

2.4.7 Interface modules

Interface modules enable the connection and communication to external devices.

Overview

Type	Range of application	Page
APS-53-SEC	- 4 control inputs for connecting a fire alarm system (FAS)	92
APS-56.1-NL	- Monitoring of external control contacts (for example: connection to a fire alarm system (FAS))	93
APS-59.1-SEC	- Intelligent for connection to a Fire alarm control panel (FAS)	94
APS-59.1-LAN-4	- Networking of APS® systems, MP3	95
APS-59.2-LAN	- Networking of APS® systems, AES67	96
APS-590	- Structure of subnetworks	97
GM-7429-BRIDGE	- Adapter RS232 to RC16 bus	98
MOXA EDS 405A	- Ethernet Switch	98
MOXA NPORT 5110A	- Ethernet data converter RS232	99
GM-7440-MA	- Connection of several racks	99
GM-7440-SL		100

Interface module FAS, 4 control inputs — 63-1110880-01-01

Standard EN 54-16
CE

The monitoring of the communication path takes place in the FAS

Scope of delivery:
Module including rear panel

APS-53-SEC

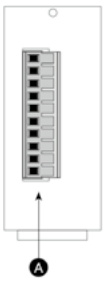
Interface module with 4 control inputs, for connection to a fire alarm system (FAS)

- Processor controlled alarm interface module, EN-5416.
- 4 monitored control functions
- Integrated resistance matrix according to VDE 0833-4 (680 Ohm, 3,300 Ohm)

Technical data

Control voltage	24 VDC
Power supply	17 VDC over System bus
Current consumption	0,032 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,5 kg
Surface front	Powder coated, dark grey

Rear panel RWS-51



A Connector block

Interface module FAS, 8 monitored inputs — 63-1110586-01-01

APS-56.1-NL

Processor-controlled alarm interface module certified according to EN 54-16 for 8 external, monitored control contacts. For connecting keys, switches, relays or other systems (e.g. manual call points or fire alarm control panels)

- A freely programmable function can be stored for each contact input
- Each input contact can be monitored by a combination of resistors
- 10 LEDs for display/control of states

Technical data

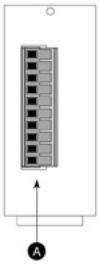
Output voltage	12 VDC
Monitoring resistors per input	2 × 1 kOhm
Input (external)	Socket 3,5 mm (RS232)
Power supply	17 VDC over System bus
Current consumption	0,032 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,35 kg
Surface front	Powder coated, dark grey

Standard EN 54-16
CE

In the APS system can be used up to 15 APS-56.1-NL. Up to 120 monitored input contacts are possible

Scope of delivery:
Module including rear panel (without resistors)

Rear panel RWS-51



A Connector block

Intelligent module for connection to a fire alarm control panel (FAS)

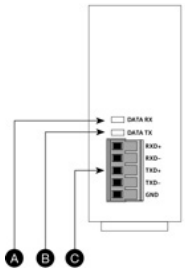
63-1110578-01-01

Standard EN 54-16

CE

Scope of delivery:
Module including rear panel (without resistors)

Rear panel RWS-59.1-SEC



A LED Receive datas
B LED LED Sending datas
C Connector block

APS-59.1-SEC

Intelligent Interface module for connection to a fire alarm control panel

- Communication module for connection to a fire alarm system of the companys Securiton/Hekatron/Schrack
- Triggering of several simultaneously active emergency texts
- Assigning the texts to loudspeaker lines by the following control modes: alarm zones (up to 254) or call groups (up to 62 per text)
- Forward the integrated function «Acoustics OFF»
- Monitoring of the connection between fire alarm system and the Voice Alarm System according to the standard EN 54-16
- Transfer status Present/Absent
- Synchronization of the states of both systems during restoration the connection
- Sending 8 errors/shutdown states to the fire alarm system

Technical data

Output voltage	17 VDC
Current consumption	45 mA
Power consumption	0,8 W
Interface	RS-422 5 poles, 9600 Baud
Max number of modules	4
Cable length max	1 km
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,420 kg
Surface front	Powder coated, dark grey

Interface module, network, for 8 NF-Channels, 4 × LAN 63-1107400-01-01

APS-59.1-LAN-4

Programmable LAN bus interface for audio transmission (MP3) and control of networked APS systems

- For bidirectional exchange of data and MP3 files to integrate PA systems into a LAN network with network components (integrated audio encoder and decoder)
- Linking of any number of sub-centres in one system
- Exchange of control data and audio channels, e.g. in connection with a media control system
- Audio transmission, MP3 bitstream
- Data transmission, UDP-Frames, Broadcast
- 4-way hub with RJ45 socket
- Mode indicator (encoder, decoder, data converter)
- Data transfer and operation display

Standard EN 54-16
CE

Scope of delivery:
Module including rear panel

Technical data

Output (external)	4 × LAN (RJ45)
Power supply	17 VDC over System bus
Current consumption	0,062 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,312 kg
Surface front	Powder coated, dark grey

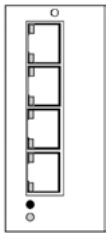
Version

APS-59.1-LAN-1
Interface module, network
for 8 LF channels, 1 × LAN

63-1108224-01-01

Product features such as
APS-59.1-LAN-4, but:
- Without hub
- Output (external) 1 × LAN (RJ45)

Rear panel RWS-59-LAN-4



Rear panel RWS-59-LAN

A Socket LAN

Interface module, network AES67, selectable for 2 real-time audio channels (12 In / 4 Out)

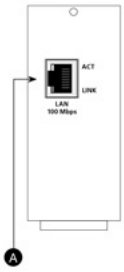
63-1111447-01-01

Standard EN 54-16

CE

Scope of delivery:
Module including rear panel

Rear panel RWS-59.2-LAN



A Socket LAN

APS-59.2-LAN

Programmable LAN bus interface for audio transmission and control of networked APS systems (AES67)

- For bidirectional exchange of data and real-time audio for integration of PA systems into a LAN network with network components (AES67)
- Linking of any number of sub-centres in one system
- Exchange of control data and audio channels between APS® systems
- Audio transmission AES67, Multicast, 2 selectable (12 In / 4 Out)
- Data transmission, UDP frames, multicast
- Mode indicator (signal, audio transmission, fault)
- Data transfer and operation display

Technical data

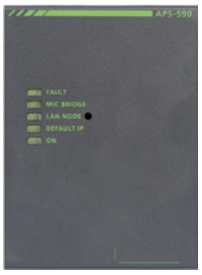
Output (external)	1 × LAN (RJ45)
Power supply	17 VDC over System bus
Current consumption	0,062 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	1 Subunit × 3 U
Weight	0,312 kg
Surface front	Powder coated, dark grey

Interface module for integration into LAN networks — 63-1109463-01-01

APS-590

PC-based network module for connecting APS systems in different subnetworks

- Connects APS headquarters via various subnets (Unicast)
- Configuration of the module via own software
- Control: PC-based, Linux operating system



Technical data

Memory capacity	8 GB (Flash card)
Power supply	17 VDC over System bus
Current consumption	0,4 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions	2 Subunits × 3 U
Weight	0,690 kg
Surface front	Powder coated, dark grey

Standard EN 54-16

One APS-590 must be provided for each APS system/network.

Scope of delivery:
Module including rear panels RWS-59-LAN and RWS-00

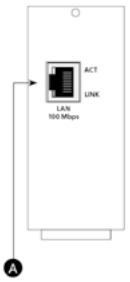
Version

APS-591
PC-based network module
for connecting APS systems
in different subnetworks

63-1111445-01-01

Product features such as APS-590, but:
- Enables the logging of the most important activities of different call stations of an APS system. This with time stamp and naming of the respective paging station.

Rear panel RWS-59-LAN



A Socket LAN

Rear panel RWS-00

Interface module RS232 to RC16 Bus — 63-1309528-01-01

CE

Scope of delivery:
Interface adapter

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

GM-7429-BRIDGE

Interface module between RS232 and RC16 bus for connecting external systems (e.g. media control systems) and APS systems

- Functions/volumes can be controlled via the RC16 bus
- 32 digital switching contacts

Technical data

RS232	9600 Baud, no parity, 8 data bits, 1 stop bit
Power supply	10–30 VDC
Current consumption	0,012 A (17 V)
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	73 × 89 × 38 mm
Weight	0,690 kg

Ethernet Switch, Wire / Glass fibre — 63-1310902-01-01

CE
Standard EN 54-16

Scope of delivery:
Interface adapter

MOXA EDS-405A

Moxa Ethernet Switch EDS-405-MM-SC.
Switch for networking Voice Alarm Systems

Technical data

Interfaces	3 × 10/100Base-T(X) 2 × 100BaseFX Multimode ports (SC/ST connector) for redundant fiber optic ring connection
Power supply	24 VDC
Operating temperature	0 °C to 60 °C
Dimensions (W × H × D)	54 × 135 × 105 mm
Weight	0,650 kg

Ethernet data converter RS232

63-2110054-01-01

MOXA NPORT 5110A

Ethernet data converter for converting Ethernet to RS232

Technical data

Interfaces	1 × 10 / 100Base-T(X) 1 × RS232
Power supply	24 VDC
Operating temperature	0 °C to 50 °C
Dimensions (W × H × D)	75,2 × 80 × 22 mm
Weight	0,340 kg

CE

Scope of delivery:
Interface adapter and plug-in power supply unit

APS-BUS-Repeater Kit 1

63-4111286-01-01

GM-7440-KIT 1

APS bus repeater for splitting audio systems into several racks.
Master and slave module

- Amplifies (Master) / Processes (Slave) I²C bus signals
- Transmitter (Master) / Receiver (Slave) function

Technical data

Interface	I²C
Power supply	Internal from system bus
Current consumption	0,030 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H)	Master: 89.6 × 197 mm, Slave: 89.6 × 197 mm

CE

Scope of delivery:
Interface module Master and Slave (3U),
2× bus cable (3U),
1× bus repeater connecting cable

APS-BUS-Repeater Kit 2 — 63-4110845-01-01

CE

Scope of delivery:
Interface adapter Slave
1× bus cable (3U),
1× bus repeater connecting cable 3 m

GM-7440 Kit 2

APS bus repeater for splitting audio systems into several racks. Slave module

- Processes I²C bus signals
- Receiver function

Technical data

SInterface	I²C
Power supply	Internal from system bus
Current consumption	0,030 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	89.6 × 72 mm

Bus repeater connecting cable 5 m — 63-4111395-01-01

APS-BUS-EXT-CAB-5

Connection cable between interface modules GM-7440-MA and GM-7440-SL

Technical data

Length	5 m

Version

APS-BUS-EXT-CAB-10
Bus repeater connecting cable

Product features such as
APS-BUS-EXT-CAB-5, but:
- Length 10 m

63-4111396-01-01

2.4.8 Line monitoring

These devices are used to monitor the loudspeaker lines. A change in the total impedance, i.e. the line plus connected loudspeakers, is monitored. The connection to the other system components is made via the rear system bus (2 × Sub-D 25-pin).

Overview

Type	Range of application	Page
APS-178.1-6-EV APS-178.1-16-EV APS-178.1-32-EV	- Monitoring of 6, 16 and 32 loudspeaker lines 100 V	102
APS-180-LOOP	- Loudspeaker monitoring, Loop technolgy	104

Loudspeaker line monitoring, 6× 63-1110440-01-01

Standard EN 54-16
CE

Scope of delivery:
Line monitoring module

APS-178.1-6-EV

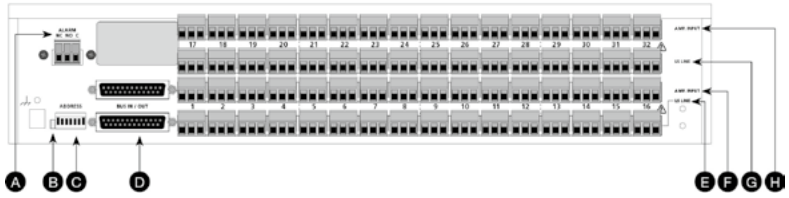
Interruption free loudspeaker line monitoring with switching function

- Continuous monitoring of each line
- Interruption free monitoring, even during announcements or music operation
- Automatic isolation of the failed speaker line in case of short circuit and earth fault
- Detection of the loudspeaker line that is again functional without resetting the device
- Integrated system clock with watchdog function for accurate logging
- Adjustment and service operation via PC or rotary knob on the front of the unit
- Individual setting of the measuring tolerance for each individual zone
- Maintenance and service menu, target and actual states
- Error detection by load measurement and phase shift measurement between current and voltage
- Error display per loudspeaker line, front LED
- Error memory, error list according to EN 60849 and EN 54-16
- Fault signal by potential-free collective contact and/or internal fault transmission to the higher-level monitoring module
- Programming and evaluation via APS®-APROSYS software

Technical data

Output per line	250 W max.
In-/Output	Per line via pluggable connector block, 3-polig
Power supply	17 VDC over System bus
Current consumption (Version 6/16/32)	0,085 A/0,15 A/0,3 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W×H×D)	435×89×380 mm
Weight (Version 6/16/32)	3,8 kg/4,3 k/5,1 kg
Surface front	Powder coated, dark grey

Rear view (e. g. APS-178.1-32-EV)



A Potential free error contact
B LED indicator (DATA)
C Mini switches for addressing
D Socket D-SUB-25 for APS bus ribbon cable (Bus connection with other APS casings)
E Output terminals for the loudspeaker lines 1 to 16
F Input terminals for the amplifiers, lines 1 to 16
G Output terminals for the loudspeaker lines 17 to 32
H Input terminals for the amplifiers, lines 17 to 32

Version

APS-178.1-16-EV — 63-1110433-01-01
Loudspeaker line monitoring, 16×. Module for uninterruptible, continuous monitoring of loudspeaker lines for short circuit, interruption, earth fault and impedance change for up to 16 loudspeaker lines.

Product features such as APS-178.1-6-EV

APS-178.1-32-EV — 63-1110435-01-01
Loudspeaker line monitoring, 32×. Module for uninterruptible, continuous monitoring of loudspeaker lines for short circuit, interruption, earth fault and impedance change for up to 32 loudspeaker lines.

Product features such as APS-178.1-6-EV

Accessories

BUS VERB.KABEL 2 HE — 63-5302334-01-01
Bus connection cable for 2 U, 0,125 m

BUS VERB.KABEL 3 HE — 63-5302335-01-01
Bus connection cable for 3 U, 0,185 m

MC-42 — 63-1203087-01-01
19" Adaptor 2U, 2 pcs
- For mounting rack devices within a 19" rack cabinet

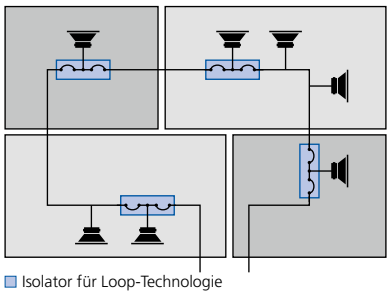
Loudspeaker loop monitoring, 12 circuits — 63-1109085-01-01

Standard EN 54-16
CE

Scope of delivery:
Loudspeaker monitoring

Loop technology
Up to 7 APS-180 can be used per APS system. This means that up to 2'940 ring line insulators can be monitored in the full configuration.

Loops per APS-180	12 (max. 6 Slots with 2 Loops)
Isolators per Loop	35
Module per APS system	7
Summ	12 × 35 × 7 = 2.940



Isolator for loop technology

APS-180-LOOP

Ring line monitoring (loop) for interruption free, continuous monitoring for short circuit, interruption, earth fault and impedance change, up to 35 isolators. Expandable up to 420 isolators.

- Basic configuration with one expansion card for 2 loop channels, can be extended by another 5 expansion cards PCB-180-LOOP_COMMM
- Continuous monitoring of each line via ring line isolators
- Uninterrupted line monitoring – even with voice announcements or background music
- Automatic isolation of the defective loudspeaker line in case of short circuit, by ring line isolators
- Recognition of the loudspeaker line in working order again without resetting the device
- Integrated system clock with watchdog function for accurate logging
- Adjustment and service operation via knob on the front of the unit
- Individual setting of the measuring tolerance for each loop
- Maintenance and service menu, retrieval of serial numbers, target and actual states
- Automatic calibration of each individual zone
- Error detection by load measurement, measurement of phase shift between current and voltage
- Error display per loop line, front LED
- Error storage in an error list according to EN 60849
- Fault signal by potential-free collective contact or / and internal fault transmission to the higher-level monitoring module
- Programming and evaluation option via APS®-APROSYS software

Technical data

Numbers of loops	6 × 2 Loops (at full expansion)
Number of lines	420 loop isolators
Display	12 LED, LCD-Display
Inputs	Over 24 connector blocks
Outputs	Over 24 connector blocks
Power supply	17 VDC over System bus
Current consumption	0,632 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	1,302 kg
Surface front	Powder coated, dark grey

Rear view

A Signal audio 100 V for the lines 1–12
B Signal audio 100 V for the lines 1–12
C Mini-switch for addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Potential free error indication contact
F Pluggable output terminals for Battery (48 V DC)
G Input socket for power supply with protection
H Fuse for battery connector
J Output socket for power supply 230 V

Accessories

PCB180-LOOP_KOMM Expansion card for 2 loop channels for APS-180 loop - The modules are plugged into the APS-180		63-4109077-01-01
GM-7179-Box Isolator for loop technology, built into plastic box - Adapter for 100 V loudspeaker on loop line		63-1709224-01-01
NETZKAB. 0.3 M Extension power cable, 0,25 m		63-5308799-01-01
NETZKAB. 0.5 M Extension power cable, 0,5 m		63-5303788-01-01
BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01


24VDC SMS-Puffer
12VDC Modem
24VDC Blitzlampen. Interface
APS-00
KEY POSITION
NORMAL
SERVICE
APS-177 EV
SYSTEM FAULT
LAMP TEST
FAULT RESET/ MEASURE
SILENCE BUZZER
230 V AC POWER ON
230 V AC POWER FAULT
DC POWER
DC POWER FAULT
EXT. INPUT FAULT
APS-990 FAULT
100V AUDIO FAULT
MESSAGE FAULT
MICROPHONE FAULT
APS-177 FAULT
COMMON FAULT
POWER
ON
OFF
Hauptschalter CAD 1912031
APS-57.1
MON - 02.12.2019
16:25:22
RTC
OK
CANCEL
AUTO
OFF
ON
ERROR
SYNC
BUS
CLOCK
CIRCUIT
SD-CARD
APS-52
APS-60
APS-00
APS-00
APS-02
APS-59 LAN
APS-19
APS-16
APS-990
TREBLE
BASS
VOLUME
TEST
OFF
BUS
VOLUME
Testmusik
LAN - Interface
Gong / Text
Sprechstellen
FAULT
I²C BUS
DATA
HOST
STAND ALONE
ON
Nächste Wartung
Quartal
Jahr
gm-elektronik.swiss
T 071 955 99 44
BO-CD-250-2
DIGITAL AMPLIFIER CLASS-D
APS®-AUDIO PROCESSOR-SYSTEM
CALL
ON
-30dB
-15dB
-9dB
-3dB
-0dB
+3dB
FAULT
Verstärker 1A
Verstärker 1B
swiss made
gm elektronik ag
DIGITAL AMPLIFIER CLASS-D

2.4.9 Amplifier

Amplifiers supply the necessary energy to drive the loudspeakers. The APS system offers 1-way, 2-way and 4-way amplifiers with different power levels. A general distinction is made between monitored and non-monitored amplifiers. **Monitored amplifiers comply with the EN 54-16 standard.**

Overview

Power		Type monitored	Type not monitored
100 W	1-way	BO-CD-100-EV	BO-CD-100
150 W		BO-CD-150-EV	BO-CD-150
250 W		BO-CD-250-EV	BO-CD-250
2 × 100 W	2-way	BO-CD-100-2-EV	BO-CD-100-2
2 × 150 W		BO-CD-150-2-EV	BO-CD-150-2
2 × 250 W		BO-CD-250-2-EV	BO-CD-250-2
4 × 100 W	4-way	BO-CD-100-4-EV	BO-CD-100-4
4 × 100 W		BO-CD-100-4-EV-AX	BO-CD-100-4-AX
4 × 100 W Long Delay		BO-CD-100-4-EV-LD	BO-CD-100-4-LD
4 × 200 W		BO-CD-200-4-EV	BO-CD-200-4
4 × 200 W		BO-CD-200-4-EV-AX	BO-CD-200-4-AX
150 W	Induction loop	–	BO-CD-155

Accessories suitable for the amplifiers, such as mounting screws, longer bus cables or short mains cables can be found under Accessories on page 126.

Monitored amplifier 100 W, in system housing 19" 63-1208329-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

Accessories see page 126

BO-CD-100-EV

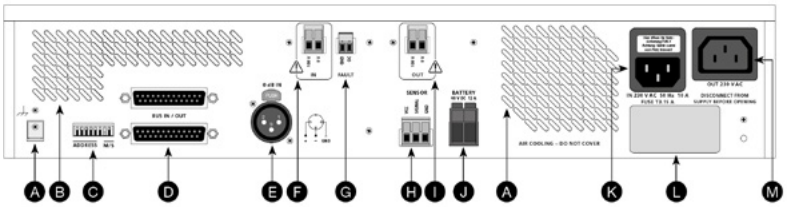
Monitored amplifier, 100 Watt

- Complete internal monitoring of audio signal, output impedance, ground fault, etc.
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, battery failure, data communication failure, thermal overload
- Integrated temperature sensor and connection for an external temperature sensor
- Emergency management and emergency power charging electronics for supplying the emergency power unit APS-151
- LED display for status and error message
- Emergency power input and output for 48 Volt emergency power
- 1 × analog LF input per amplifier 0 dB XLR 3 pole, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Separate volume controls, separate for announcement/alarm and music transmission
- Built-in switch-on noise suppression
- Standby mode can be activated

Technical data

Frequency range	30– 20'000 Hz, -3 dB
Power output	100 Watt (IEC268-3/19.4)
Output voltage	100 Volt
Input LF	1 × XLR 3 pole/internal busses (BF1–BF4)
System bus	2 × Sub-D 25 pole
Power supply	230 VAC ±10%
Emergency power supply	48 VDC
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	6 kg
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input socket XLR 3-pole for amplifier
F Connector block for reserve amplifier
G Not available
H Connector block for temperature sensor
I Connector block for amplifier
J Connector block for the battery (48 VDC)
K Mains power input 230 V with integrated fuse
L Type label
M Mains power output 230 V for extension

Version

BO-CD-150-EV Monitored amplifier 150 W, in system housing 19". Product features such as BO-CD-100-EV, but: - Weight 6,5 kg		63-1208316-01-01
BO-CD-250-EV Monitored amplifier 250 W, in system housing 19". Product features such as BO-CD-100-EV, but: - Weight 7,1 kg		63-1208039-01-01

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 M Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 M Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Monitored amplifier, 2 × 100 W, in system housing 19" 63-1208050-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

Accessories see page 126

BO-CD-100-2-EV

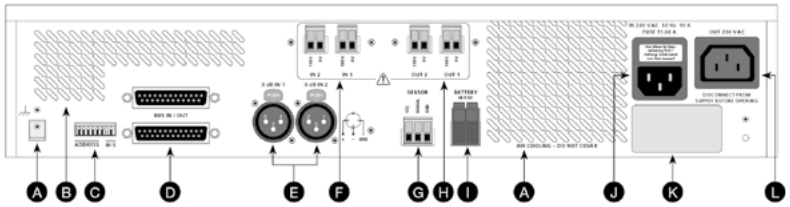
Monitored amplifier, 2 × 100 Watt

- Complete internal monitoring of audio signal, output impedance, ground fault, etc.
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, battery failure, data communication failure, thermal overload
- Integrated temperature sensor and connection for an external temperature sensor
- Emergency management and emergency power charging electronics for supplying the emergency power unit APS-151
- LED display for status and error message
- Emergency power input and output for 48 Volt emergency power
- 2 × analog LF input per amplifier 0 dB XLR 3 pole, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Separate volume controls, separate for announcement/alarm and music transmission
- Built-in switch-on noise suppression
- Standby mode can be activated

Technical data

Frequency range	30–20.000 Hz, -3 dB
Power output	2 × 100 Watt (IEC268-3/19.4)
Output voltage	100 Volt
Input LF	2 × XLR 3 pole/internal busses (BF1–BF4)
System bus	2 × Sub-D 25 pole
Power supply	230 VAC ±10%
Emergency power supply	48 VDC
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	7,95 kg (BO-CD-100-2-EV)
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input sockets XLR 3-pole for amplifiers 1 and 2
F Input connector blocks for reserve amplifiers
G Connector block for temperature sensor
H Output connector blocks for amplifiers 1 and 2
I Connector block for the battery (48 VDC)
J Mains power input 230 V with integrated fuse
K Type label
L Mains power output 230 V for extension

Version

BO-CD-150-2-EV Monitored amplifier 2 × 150 W, in system housing 19". Product features such as BO-CD-100-2-EV, but: - Weight 8,0 kg		63-1208051-01-01
BO-CD-250-2-EV Monitored amplifier 2 × 250 W, in system housing 19". Product features such as BO-CD-100-2-EV, but: - Weight 10,1 kg		63-1208040-01-01

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 M Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 M Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Monitored amplifier 4 × 100 W, in system housing 19" 63-1209428-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

Accessories see page 126

BO-CD-100-4-EV

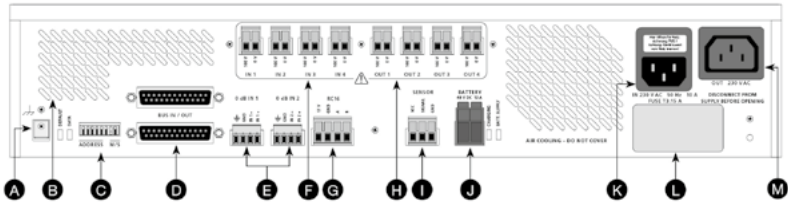
Monitored amplifier, 4 × 100 Watt

- Integrated 4-channel DSP with 4 DSP functions each for volume, equalizer, delay and dynamic control
- Complete internal monitoring according to EN 60849 and BS 5839 (audio signal, output impedance, earth fault etc.)
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, battery failure, data communication failure, thermal overload
- Integrated temperature sensor and connection for an external temperature sensor
- Emergency management and emergency power charging electronics for supplying the emergency power unit APS-151
- Digital error and preset display.
  16 presets, switching from system processor or from a digital remote control
- Emergency power input and output for 48 Volt emergency power
- Charging electronics to support the emergency power supply in accordance with EN 54-4
- 2 × analog LF input per amplifier 0 dB XLR 3 pole, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Volume control per amplifier stage, separate for volume and shadow volume
- Level display per channel via LED bar
- Built-in switch-on noise suppression
- Standby mode can be activated
- Possible functions per channel:
  Equalizer, 10 fully parametric bands +12 dB
  Delay, 0 to 40 m (3 to 122 ms), temperature compensated
  2 volume levels switchable: volume, shadow volume (-100 dB to +6 dB)
  2-point dynamics, operating modes: expander, compressor, limiter

Technical data

Reference level	0 dBm
Display	2 × 7 Segment display
Channels	4 internal, 2 external
Input LF	2 × via connector blocks / internal busses (BF1–BF4)
Input sensitivity	10 kOhm, symmetric
Frequency range	50–20'000 Hz, -3 dB
Power output	4 × 100 Watt (IEC268-3/19.4)
Output voltage	100 Volt
Power supply	230 VAC ±10 %
Nominal frequency	50 to 60 Hz
Emergency power supply	48 VDC
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	8,5 kg
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input connector blocks for LF signal
F Input connector blocks for reserve amplifiers 1–4
G Connector block for remote control (RC16)
H Output connector blocks for amplifiers 1–4
I Connector block for temperature sensor
J Connector block for the battery (48 VDC)
K Mains power input 230 V with integrated fuse
L Type label
M Mains power output 230 V for extension

Version

BO-CD-100-4-EV-LD Monitored amplifier, 4 × 100 W, Long Delay, in system housing 19". Product features such as BO-CD-100-4-EV, but: - A Long Delay per channel, Delays of the audio signal on each channel individually adjustable - Total over all 4 channels to 14,56 sec. resp. to 4,8 km		63-1210219-01-01
BO-CD-100-4-EV-AX Monitored amplifier 4 × 100 W, in system housing19". Product features such as BO-CD-100-4-EV, but: - Additional 4 × analog LF input per amplifier, balanced, mixable with APS-Bus		63-1211251-01-01

Accessories

BUS VERB.KABEL U 2 U, 0,125 m 3 U, 0,185 m		 63-5302334-01-01 63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 M NETZKAB. 0.5 M		63-5308799-01-01 63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet	 	63-1203087-01-01

Monitored amplifier 4 × 200 W, in system housing 19" 63-1211053-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

Accessories see page 126

BO-CD-200-4-EV

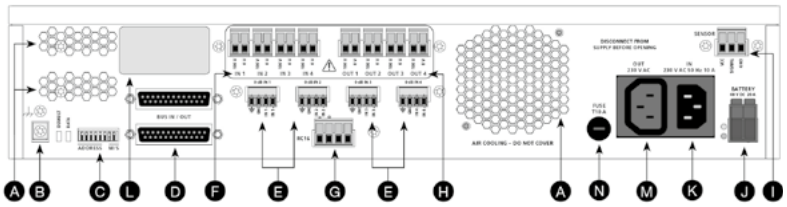
Monitored amplifier, 4 × 200 Watt

- Integrated 4-channel DSP with 4 DSP functions each for volume, equalizer, delay and dynamic control
- Complete internal monitoring according to EN 60849 and BS 5839 (audio signal, output impedance, earth fault etc.)
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, battery failure, data communication failure, thermal overload
- Integrated temperature sensor and connection for an external temperature sensor
- Emergency management and emergency power charging electronics for supplying the emergency power unit APS-151
- Digital error and preset display.
  16 presets, switching from system processor or from a digital remote control
- Emergency power input and output for 48 Volt emergency power
- Charging electronics to support the emergency power supply in accordance with EN 54-4
- 4 × analog LF input per amplifier via APS bus
- Volume control per amplifier stage, separate for volume and shadow volume
- Level display per channel via LED bar
- Built-in switch-on noise suppression
- Standby mode can be activated
- Possible functions per channel:
  Equalizer, 10 fully parametric bands +12 dB
  Delay, 0 to 40 m (3 to 122 ms), temperature compensated
  2 volume levels switchable: volume, shadow volume (-100 dB to +6 dB)
  2-point dynamics, operating modes expander, compressor, limiter

Technical data

Reference level	0 dBm
Display	2 × 7 Segment display
Channels	4 internal
LF Input	2 × via connector blocks/internal busses (BF1–BF4)
Input sensitivity	10 kOhm, symmetric
Frequency range	50–20'000 Hz, -3 dB
Power output	4 × 200 Watt (IEC268-3/19.4)
Output voltage	100 Volt
Power supply	230 VAC ±10%
Nominal frequency	50 to 60 Hz
Emergency power supply	48 VDC
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	11,5 kg
Surface front	Powder coated, dark grey

Rear view



A Ventilation grille
B Functional earth
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input connector blocks for LF signal
F Input connector blocks for reserve amplifiers 1–4
G Connector block for remote control (RC16)
H Output connector blocks for amplifiers 1–4
I Connector block for temperature sensor
J Connector block for the battery (48 VDC)
K Mains power input
L Type label
M Mains power output 230 V for extension
N Fuse

ATTENTION: Connector block E only availbale for BO-CD-200-4-EV-AX

Version

BO-CD-200-4-EV-AX Monitored amplifier 4 × 200 W, in system housing19". Product features such as BO-CD-200-4-EV, but: - Additional 4 × analog LF input per amplifier, balanced, mixable with APS-Bus		63-1211441-01-01

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 m Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Amplifier 100 W, in system housing 19" 63-1208030-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

Accessories see page 126

BO-CD-100

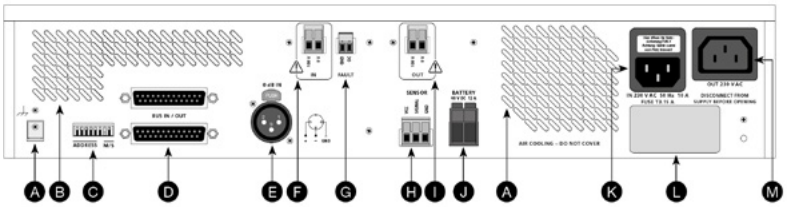
Amplifier, 100 Watt

- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, data communication failure, thermal overload
- Digital error and preset display
- 1 × analog LF input per amplifier 0 dB XLR 3 pole, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Separate volume controls, separate for announcement/alarm and music transmission
- Built-in switch-on noise suppression
- Standby mode can be activated

Technical data

Frequency range	30– 20'000 Hz, -3 dB
Power output	100 Watt (IEC268-3/19.4)
Output voltage	100 Volt
LF Input	1 × XLR 3 pole/internal busses (BF1–BF4)
System bus	2 × Sub-D 25 pole
Power supply	230 VAC ±10 %
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	6 kg
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input sockets XLR 3-pole for amplifiers
F Not available
G Not available
H Not available
J Not available
K Mains power input 230 V with integrated fuse
L Type label
M Mains power output 230 V for extension

ATTENTION: Connector blocks F, G, H and J only available for EV version

Version

BO-CD-150 Amplifier 150 W, in system housing 19". Product features such as BO-CD-100, but: - Weight 6,5 kg		63-1208032-01-01
BO-CD-250 Amplifier 250 W, in system housing 19". Product features such as BO-CD-100, but: - Weight 7,1 kg		63-1208022-01-01

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 m Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Ampilfier 2 × 100 W, in system housing 19" 63-1208031-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

Accessories see page 126

BO-CD-100-2

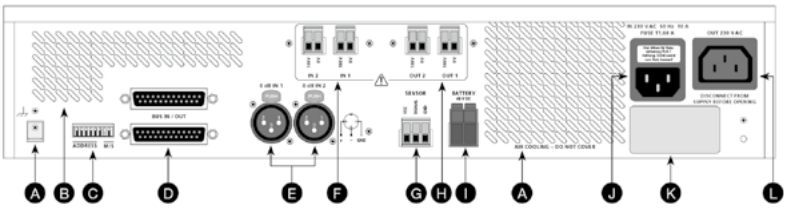
Amplifier, 2 × 100 Watt

- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, data communication failure, thermal overload
- Digital error and preset display
- 2 × analog LF input per amplifier 0 dB XLR 3 pole, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Separate volume controls, separate for announcement / alarm and music transmission
- Built-in switch-on noise suppression
- Standby mode can be activated

Technical data

Frequency range	30–20'000 Hz, -3 dB
Power output	2 × 100 Watt (IEC268-3 / 19.4)
Output voltage	100 Volt
LF Input	2 × XLR 3 pole / internal busses (BF1–BF4)
System bus	2 × Sub-D 25 pole
Power supply	230 VAC ±10%
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	7,95 kg (BO-CD-100-2)
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input sockets XLR 3-pole for amplifiers 1 and 2
F Not available
G Not available
H Output connector blocks for amplifiers 1 and 2
I Not available
J Mains power input 230 V with integrated fuse
K Type label
L Mains power output 230 V for extension

ATTENTION: Connector blocks F, G and I only available for EV version

Versionn

BO-CD-150-2 Ampilifier 2 × 150 W, in system housing 19". Product features such as BO-CD-100-2, but: - Weight 7,0 kg		63-1208033-01-01
BO-CD-250-2 Amplifier 2 × 250 W, in system housing 19". Product features such as BO-CD-100-2, but: - Weight 9,0 kg		63-1208023-01-01

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 m Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Amplifier 4 × 100 W, in system housing 19" 63-1209365-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

Accessories see page 126

BO-CD-100-4

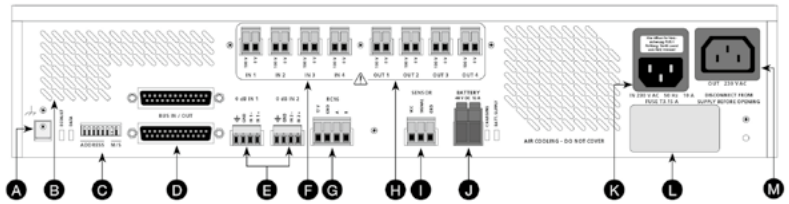
Amplifier, 4 × 100 Watt

- Integrated 4-channel DSP with 4 DSP functions each for volume, equalizer, delay and dynamic control
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, data communication failure, thermal overload
- Digital error and preset display.
  16 presets, switching from system processor or from a digital remote control
- 2 × analog LF input per amplifier 0 dB XLR 3-pin, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Volume control per amplifier stage, separate for volume and shadow volume
- Level display per channel via LED bar
- Built-in switch-on noise suppression
- Standby mode can be activated
- Possible functions per channel:
  Equalizer, 10 fully parametric bands +12 dB
  Delay, 0 to 40 m (3 ms to 122 ms), temperature compensated
  2 volume levels switchable: volume, shadow volume (-100 dB to +6 dB)
  2-point dynamics, operating modes expander, compressor, limiter

Technical data

Reference level	0 dBm
Display	2 × 7 Segment display
Channels	4 interne, 2 externe
LF Input	2 × via connector blocks / internal busses (BF1–BF4)
Input sensitivity	10 kOhm, symmetric
Frequency range	50–20'000 Hz, -3 dB
Power output	4 × 100 Watt (IEC268-3/19.4)
Output voltage	100 Volt
Power supply	230 VAC ±10%
Nominal frequency	50–60 Hz
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	8,5 kg
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input connector blocks for LF signal
F Not available
G Connector block for remote control (RC16)
H Output connector blocks for amplifiers 1–4
I Not available
J Not available
K Mains power input 230 V with integrated fuse
L Type label
M Mains power output 230 V for extension

ATTENTION: Connector blocks F, I and J only available for EV version

Version

BO-CD-100-4-LD Amplifier 4 × 100 W, Long Delay, in system housing19" Product features such as BO-CD-100-4, but: - A Long Delay per channel, Delays of the audio signal on each channel individually adjustable - Total over all 4 channels to 14,56 sec. resp. to 4,8 km		63-1210218-01-01
BO-CD-100-4-AX Monitored amplifier 4 × 100 W, in system housing 19". Product features such as BO-CD-100-4, but: - Additional 4 × analog LF input per amplifier, balanced, mixable with APS-Bus		63-1211250-01-01

Accessories

BUS VERB.KABEL U 2 U, 0,125 m 3 U, 0,185 m		 63-5302334-01-01 63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 M NETZKAB. 0.5 M		63-5308799-01-01 63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Amplifier 4 × 200 W, in system housing 19" 63-1211052-01-01

Standard EN 54-16
CE

Scope of delivery:
Amplifier

Accessories see page 126

BO-CD-200-4

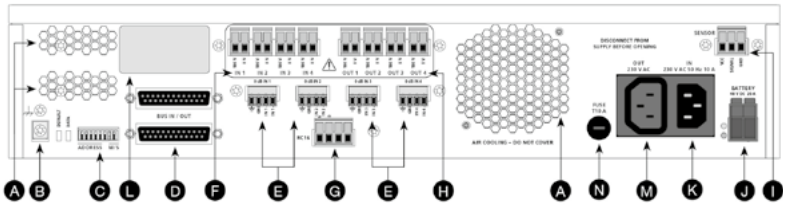
Amplifier, 4 × 200 Watt

- Integrated 4-channel DSP with 4 DSP functions each for volume, equalizer, delay and dynamic control
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, data communication failure, thermal overload
- Digital error and preset display.
  16 presets, switching from system processor or from a digital remote control
- 4 × analog LF input per amplifier via APS bus
- Volume control per amplifier stage, separate for volume and shadow volume
- Level display per channel via LED bar
- Built-in switch-on noise suppression
- Standby mode can be activated
- Possible functions per channel:
  Equalizer, 10 fully parametric bands +12 dB, 0–40 m (3–122 ms), temperature-compensated
  Delay, 0 to 40 m (3 ms to 122 ms), temperature compensated
  2 volume levels switchable: volume, shadow volume (-100 dB to +6 dB)
  2-point dynamics, operating modes expander, compressor, limiter

Technical data

Reference level	0 dBm
Display	2 × 7 Segment display
Channels	4 internal
LF Input	2 × via connector blocks / internal busses (BF1–BF4)
Input sensitivity	10 kOhm, symmetric
Frequency range	50–20'000 Hz, -3 dB
Power output	4 × 200 Watt (IEC268-3/19.4)
Output voltage	100 Volt
Power supply	230 VAC ±10%
Nominal frequency	50–60 Hz
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	10,5 kg
Surface front	Powder coated, dark grey

Rear view



A Ventilation grille
B Functional earth
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input connector blocks for LF signal
F Input connector blocks for reserve amplifiers 1–4
G Connector block for remote control (RC16)
H Output connector blocks for amplifiers 1–4
I Connector block for temperature sensor
J Connector block for the battery (48 VDC)
K Mains power input
L Type label
M Mains power output 230 V for extension
N Fuse

ATTENTION: Connector block E only available for BO-CD-200-4-AX

Version

BO-CD-200-4-AX Monitored Amplifier 4 × 200 W, in system housing 19". Product features such as BO-CD-200-4, but: - Additional 4 × analog LF input per amplifier, balanced, mixable with APS-Bus		63-1211440-01-01

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 m Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

Induction loop amplifier 150 W, in system housing 19" 63-1207893-01-01

CE

Scope of delivery:
Induction loop amplifier

Accessories see page 126

BO-CD-155

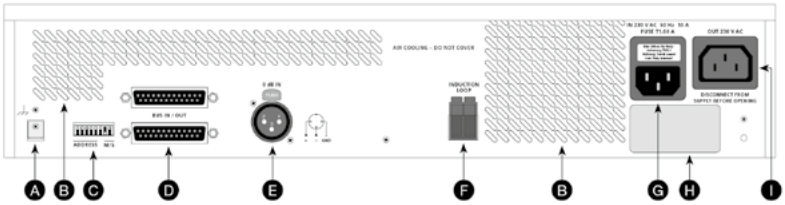
Constant current amplifier for alerting persons with hearing loss

- Micro-controller control for measuring the induction loop, simple setup according to EN 60118-4
- For induction loops with DC resistance from 0,4–2,5 Ohm
- Electronic, balanced audio input via XLR sockets
- Built-in switch-on noise suppression
- Processor-controlled automatic gain control AGC
- Protection circuits to prevent overload, short circuit, no-load, overvoltage
- Monitoring for power failure, data communication failure, thermal overload
- Analog LF input per amplifier 0 dB XLR 3 pole, balanced mixable with APS-Bus
- 4 × analog LF input per amplifier via APS bus
- Integrated amplifier monitoring in combination with processor module APS-990
- Display level and status / error message via LED
- Standby mode can be activated
- Programming via PC or via APS-990

Technical data

Input sensitivity	10 kOhm, symmetric
Frequency range	100–10'000 Hz, -3 dB
Power output	190 / 150 Watt (IEC268-3 / 19.4)
Max. output current	16 A
LF Input	XLR 3 pole over module or system bus
System bus	2 × Sub-D 25 pole
Power supply	230 VAC ±10%
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	435 × 89 × 380 mm
Weight	6,0 kg
Surface front	Powder coated, dark grey

Rear view



A Functional earth
B Ventilation grille
C Mini-switches for the addressing
D Socket D-SUB-25 for APS bus ribbon cable
E Input socket XLR 3-pole for amplifier
F Connector block for induction loop
G Mains power input 230 V with integrated fuse
H Type label
I Mains power output 230 V (for extension)

Accessories

BUS VERB.KABEL 2 HE Bus connection cable for 2 U, 0,125 m		63-5302334-01-01
BUS VERB.KABEL 3 HE Bus connection cable for 3 U, 0,185 m		63-5302335-01-01
NETKAB.EU Power supply cable 2,5 m		63-5304008-01-01
NETZKAB. 0.3 m Extension power cable, 0,3 m		63-5308799-01-01
NETZKAB. 0.5 m Extension power cable, 0,5 m		63-5303788-01-01
MC-42 19" Adaptor 2U, 2 pcs - For mounting rack devices within a 19" rack cabinet		63-1203087-01-01

2.4.10 Accessories for APS®-APROSYS Voice Alarm Systems

Both mechanical accessories and cable connections and cable adapters are listed here.

Labelling sheet A5, 5 × 72 labels — 63-1011488-01-01

Set Label-A5

5 sheets (A5) with 72 labels each for labelling the APS front panels and the intercom keys

Set potentiometer cover — 63-5511448-01-01

SET POTI-ABD.

Set with 20 blind covers

19" Mounting Set, front and rear panel — 63-1211456-01-01

Set-00

Blank panels for unused slots in case MC-03, front and rear

- Dimensions 1 subunit, × 3 U
- Surface powder coated, dark grey

Screws 2,9 × 6,5 mm for housing MC-03 — 63-2500049-01-01

SET-SCHR. MC-03

Mounting material for the mounting/fixing of various APS components in module case MC-03

- Set with 1'000 screws
- Dimensions: 2,9 × 6,5 mm
- Colour: black

Mounting set 19" with front and rear patch — 63-5511429-01-01

SET STAPEL

Front patch
Connecting plate (rail) for stackable devices
Lateral/side connecting rail to screw two devices together
Dimensions (W× H × D) 10 × 11,5 × 4, 8, 6 mm, 1 U

Rear patch
Connecting plate (rail) for stackable devices
Rear connecting rail to screw two devices together
Dimensions (W× H × D) 397 × 37 × 2 mm, 1 U

- Surface powder coated, dark grey

- Screws included

19" Adaptor, 2 U — 63-1203087-01-01

MC-42

Mounting brackets 19", 2U, for mounting rack devices in a 19" rack cabinet

- 2 brackets for mounting of rack devices (2 U)

- Surface powder coated, dark grey

Mounting screws available separately (4 × M6)

Scope of delivery:
Mounting brackets incl. screws 2,9 × 6,5 mm

19" Adaptor, 3 U — 63-1203088-01-01

MC-43

Mounting brackets 19", 3U, for mounting rack devices in a 19" rack cabinet

- 2 brackets for mounting of rack devices (3 U)

- Surface powder coated, dark grey

Mounting screws available separately (4 × M6)

Scope of delivery:
Mounting brackets incl. screws 2,9 × 6,5 mm

Blank panel 19", 1 U — 63-5503106-01-01

Mounting screws available separately (4 × M6)

Scope of delivery:
Blind plate

MC-61

Blank panel, 1 U, built within a 19" rack cabinet

Technical data

Dimensions (W × H × D)	435 × 44,5 × 3 mm
Surface	Powder coated, dark grey

Blank panel 19", 1 U, with ventilator slots — 63-5505212-01-01

Mounting screws available separately (4 × M6)

Scope of delivery:
Front plate

MC-61-KLF

Blank panel 19", 1 U, with ventilator slots, built within a 19" rack cabinet

Technical data

Dimensions (W × H × D)	435 × 44,5 × 3 mm
Surface	Powder coated, dark grey

Blank panel 19", 2 U — 63-5503104-01-01

Mounting screws available separately (4 × M6)

Scope of delivery:
Blind plate

MC-62

Blank panel, 19", 2 U, built within a 19" rack cabinet

Technical data

Dimensions (W × H × D)	435 × 89 × 3 mm
Surface	Powder coated, dark grey

Blank panel 19", 3 U — 63-5503105-01-01

Mounting screws available separately (4 × M6)

Scope of delivery:
Blind plate

MC-63

Blank panel, 19", 3 U, built within a 19" rack cabinet

Technical data

Dimensions (W × H × D)	435 × 133 × 3 mm
Surface	Powder coated, dark grey

Cable

Power supply cable 2,5 m — 63-5304008-01-01

NETKAB.EU

Power supply cable

Technical data

Length	2,5 m
Diameter	3 × 0,75 mm²
Colour	Black

Extension power cable 0,3 m — 63-5308799-01-01

NETZKAB. 0,3 m

Extension power cable, male/female

Technical data

Length	0,3 m
Colour	Black

Extension power cable 0,5 m — 63-5308788-01-01

NETZKAB. 0,5 m

Extension power cable, male/female

Technical data

Length	0,5 m
Colour	Black

BUS Connection cable for 2 U, 0,125 m — 63-5302334-01-01

BUS VERB.KABEL 2 U

Bus connection cable for 2 U

- 25 pole connection cable (APS-Bus-System) for the connection of 2 devices (2 U)

Technical data

Length	0,125 m

Version

BUS VERB.KABEL 2 U Bus connection cable for 3 U, 0,185 m Product features such as BUS VERB.KABEL 2 U, but: - 3 U - Length 0,185 m		63-5302335-01-01
BUS VERB.KABEL 2M Bus connection cable 2 m Product features such as BUS VERB.KABEL 2 U, but: - Length 2 m		63-5310834-01-01
BUS VERB.KABEL 3M Bus connection cable 3 m Product features such as BUS VERB.KABEL 2 U, but: - Length 3 m		63-5311276-01-01
BUS VERB.KABEL 5M Bus connection cable 5 m Product features such as BUS VERB.KABEL 2 U, but: - Length 5 m		63-5311394-01-01

Miscellaneous

RS232-Cable for APS-990, 3 m — 63-5307453-01-01

DAT.KAB.990-RS232

RS232 data cable for programming the APS-990 processor/control module

Technical data

Length	3 m

Converter USB 2.0 to RS232 — 63-5207324-01-01

USB-RS232ADAPTER

For connecting serial devices to the USB port, suitable for devices with serial interface

- USB to Serial Converter (COM)
- D-SUB 9 pole plug

Set Gibi connectors, 2P — 63-5511486-01-01

SET KLEMM-2P

Set with 20 connectors, 2 pole, for divers APS components

Set Gibi connectors, 3P — 63-5511487-01-01

SET KLEMM-3P

Set with 20 connectors, 3 pole, for divers APS components

3. Mic. consoles, Music player / source

3.1 Microphone consoles, Firefighters microphone-panel 134

3.2 Remote controls 140

3.3 Music player / Music source 147

3. Microphone consoles, Music player

This chapter lists components whose audio signals are fed into the voice control units (PA, FAS and VACIE) with cable connections.

3.1 Microphone consoles, Firefighters microphone-panel

Microphone consoles enables the announcement of precise informations to individual sound reinforcement areas. The structure of a microphone console can be described as follows:

- Microphone with PTT (Push-to-talk) button
- Keys for selecting the desired sound areas
- Alarm keys

In self-monitoring stations (types marked -EV), the transmission line and the microphone are monitored by the Voice alarm system.

Intercom stations with alarm button (types marked -xAL) have x buttons with cover and can be programmed for e.g. fire alarm, house alarm, amok alarm, gong triggering etc.

Analogue microphone console, cabel 3 m, XLR — 63-1310361-01-01

Suitable for compact stations LC-CD and EVAC-MC-LC250

Scope of delivery:
Microphone console

APS-301-P-C5

Analogue microphone console with illuminated PTT button and condenser microphone. Connection cable with XLR plug

- Microphone console with condenser microphone and metal base
- Illuminated PTT button (Green: Ready, Red: announcement active)
- Cable with plug XLR 5 pole

Technical data

Power supply	Phantom power 12–48 V
Current consumption	9,4 mA
Operating temperature	0 °C to 55 °C
Dimensions (W × H × D)	120 × 50 × 170 mm (Metal base)
Weight	1 kg
Colour	Anthracite

Accessories

AD XLR-5 für APS-3xx Junction box XLR 5 pole	63-2700017-01-01

Digital microphone console, 8 selection keys / 1 PTT (Push-to-talk) button

63-1310715-01-02

APS-308.2-EV

Digital microphone console for operating the entire Voice alarm system in case of fire and normal operation.
For the transmission of fire, information and call announcements

- Selection of loudspeaker lines and groups, 8 freely programmable keys
- 1 PTT (Push-to-talk) button
- Permanent monitoring of data transmission and microphone capsule, programmable
- Built-in buzzer for signalling fault signal states, with monitoring function
- Keys programmable, function keys or switches
- LED status indicators for operation, fault and busy (red, green, yellow)
- Keys freely programmable in 2 levels
- Each key contains multicoloured LED (blue, red, yellow) for clear visualization

Technical data

Connection (external)	2 × RJ45 (In / Out)
Microphone	Dynamic
Cable length (Data-S Bus):	Max. 1'000 m
Power supply	17 VDC over System bus
Current consumption	0,30 A
Current consumption (Standby)	0,125 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	100 × 136 × 180 mm
Weight	1,55 kg (APS-308.2)
Surface front	Silver metallic

Version

APS-316.2-EV — 63-1310718-01-02
Microphone console
16 selection keys / 1 PTT

Product features such as APS-308.2-EV, but:
- Dimensions (W × H × D): ca. 158 × 136 × 180 mm

APS-324.2-EV — 63-1310720-01-02
Microphone console
24 selection keys / 1 PTT

Product features such as APS-308.2-EV, but:
- Dimensions (W × H × D): ca. 216 × 136 × 180 mm

APS-324.2-EV

Norm EN 54-16
CE

Suitable for APS®-APROSYS systems

Scope of delivery:
Mic. console, cabel 3 m with RJ45

Version	
APS-332.2-EV Microphone console 32 selection keys / 1 PTT Product features such as APS-308.2-EV, but: - Dimensions (W × H × D): ca. 274 × 136 × 180 mm	63-1310722-01-02
APS-340.2-EV Microphone console 40 selection keys / 1 PTT Product features such as APS-308.2-EV, but: - Dimensions (W × H × D): ca. 332 × 136 × 180 mm	63-1310746-01-02
APS-348.2-EV Microphone console 48 selection keys / 1 PTT Product features such as APS-308.2-EV, but: - Dimensions (W × H × D): ca. 390 × 136 × 180 mm	63-1310970-01-02
APS-356.2-EV Microphone console 56 selection keys / 1 PTT Product features such as APS-308.2-EV, but: - Dimensions (W × H × D): ca. 448 × 136 × 180 mm	63-1310971-01-02
APS-364.2-EV Microphone console 64 selection keys / 1 PTT Product features such as APS-308.2-EV, but: - Dimensions (W × H × D): ca. 506 × 136 × 180 mm	63-1310972-01-02

Accessories	
Wall mounting set for APS-3xx.2	63-1311500-01-01
AD XLR-6 für APS-3xx Junction box XLR 6-pole for digital mic. consoles with covers	63-2700018-01-01

Monitored microphone console, 8 selection keys/1 PPT/3 covered alarm keys

63-1310716-01-02

APS-308.2-3AL-EV

Digital microphone station with special alarm buttons for operation of the entire Voice alarm system in case of fire and normal operation. For transmission of fire, information and call announcements

- Selection of loudspeaker lines and groups, 8 freely programmable keys
- 1 PTT (Push-to-talk) button
- 3 alarm buttons, manual triggering of alarm signals and stored emergency announcements
- Permanent monitoring of data transmission and microphone capsule, programmable
- Built-in buzzer for signalling fault signal states
- Keys programmable, function keys or switches
- LED status indicators for operation, fault and busy (red, green, yellow)
- Keys freely programmable in 2 levels
- Each key contains multicoloured LED (blue, red, yellow) for clear visualization

APS-316.2-3AL-EV

Norm EN 54-16

CE

Suitable for APS®-APROSYS systems

Scope of delivery: Mic. console, cabel 3 m with RJ45

Technical data

Connection (external)	2 × RJ45 (In/Out)
Microphone	Dynamic
Cable length (Data-S Bus):	Max. 1'000 m
Power supply	17 VDC over System bus
Current consumption	0,30 A
Current consumption (Standby)	0,125 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	158 × 136 × 180 mm
Weight	1,55 kg (APS-308.2-3AL)
Surface front	Silver metallic

Version

APS-308.2-6AL-EV Monitored microphone console, 8 zone keys/1 PTT/6 alarm keys Product features such as APS-308.2-3AL-EV, but: - Dimensions (W × H × D): ca. 216 × 136 × 180 mm	63-1310717-01-02
APS-316.2-3AL-EV Monitored microphone console, 16 zone keys/1 PTT/3 alarm keys Product features such as APS-308.2-3AL-EV, but: - Dimensions (W × H × D): ca. 216 × 136 × 180 mm	63-1310719-01-02

Version

APS-324.2-3AL-EV Monitored microphone console, 24 zone keys / 1 PTT- / 3 alarm keys Product features such as APS-308.2-3AL-EV, but: - Dimensions (W × H × D): ca. 274 × 136 × 180 mm	63-1310721-01-02
APS-332.2-3AL-EV Monitored microphone console, 32 zone keys / 1 PTT- / 3 alarm keys Product features such as APS-308.2-3AL-EV, but: - Dimensions (W × H × D): ca. 332 × 136 × 180 mm	63-1310969-01-02
APS-340.2-3AL-EV Monitored microphone console, 40 zone keys / 1 PTT- / 3 alarm keys Product features such as APS-308.2-3AL-EV, but: - Dimensions (W × H × D): ca. 390 × 136 × 180 mm	63-1310745-01-02
APS-348.2-3AL-EV Monitored microphone console, 48 zone keys / 1 PTT- / 3 alarm keys Product features such as APS-308.2-3AL-EV, but: - Dimensions (W × H × D): ca. 448 × 136 × 180 mm	63-1311265-01-02

Accessories

AD XLR-6 für APS-3xx Junction box XLR 6-pole for digital mic. consoles with covers	63-2700018-01-01

Firefighters microphone-panel with 5 alarm keys, surface-mounted

63-1310446-01-02

GM-FWS-3033-BOX

Programmable Firefighters microphone-panel in metal housing (surface-mounted). Microphone with monitored microphone capsule

- 5 alarm buttons for manual triggering of alarm signals and stored emergency announcements
- 2 function keys, 3 status LED
- Handheld microphone for fire brigade announcements
- Buzzer for signalling fault conditions
- Permanent monitoring of microphone capsule and processor including serial data exchange
- Lockable metal housing (delivery without profile half cylinder)

Norm EN 54-16

CE

Suitable for APS®-APROSYS systems

An alternative cylinder must be ordered directly by the operator from a corresponding supplier after approval by the fire brigade!

Scope of delivery:
Firefighters microphone-panel

Technical data

Cable length (Max. distance)	1'000 m to the APS®-System
Power supply	17 VDC over System bus
Current consumption	0,150 A
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	204 × 300 × 70 mm
Weight	3 kg
Housing colour	Red (similar RAL 3000)
Color of the operator panel	White (similar RAL 9002)

Variante

GM-FWS-3033-UP — 63-1310761-01-02
Firefighters microphone-panel
with 5 alarm keys, flush-mounted

Product features such as
GM-FWS-3033-BOX, but:
- Flush-mounted
- Housing colour:
  Light grey (similar RAL 7035)
- Dimensions (W × H × D):
  ca. 240 × 336 × 70 mm

3.2 Remote controls

Electronic remote controls can be used to connect remote audio sources and microphones (e.g. in sports halls) to the APS® system. Remote controls are available in horizontal and vertical installation orientations and with different input signal circuitry.

Remote control unit horizontal, 2× Microphone, 1× AUX, Bluetooth — 63-6112192-01-01

Standard	Electromagnetic immunity according to EN 55024/ EN 301 489 Interference emission according to EN 55022/ EN 300 220-1

Control via the APS® system module APS-04.1 or via APS-11-4 with additional board

Scope of delivery: Remote control unit

Accessories see Page 145

APS-440-A02-H-BT

Unit for connecting 4 external signal sources, two for microphones. Bluetooth. Control electronics and buttons for freely programmable functions. Horizontal installation

- 2× Input for microphone, with switchable phantom power
- 1× Inputs for AUX signals
- Bluetooth
- Inputs individually adjustable
- Sum output with LED control and separate tone control for bass and treble
- Adjustable limiter for maximum volume limitation
- Key for freely programmable function

Technical data

Connection microphone	2 × symmetrisch, 3 pole XLR with locking
Connection AUX	1 × asymmetric, 2 Cinch sockets each
Controller	4 × volumne, 1 × treble, 1 × bass
Connection (internal)	Connector block, 4-pole
Power supply	15 VDC over APS-04 or APS 11-4
Current consumption	50 mA
Operating temperature	-5 °C to 40 °C (EN 54-16)
Dimensions (W × H × D)	200 × 140 × 60 mm
Weight	0,40 kg
Surface front	Anodised aluminium

Version

APS-440-A02-V-BT — 63-6112193-01-01
Product features such as APS-440-A02-H, but:
- Vertical orientation (W × H × D): 140 × 200 × 60 mm

APS-440-A01-H — 63-1307697-01-01

Product features such as APS-440-A02-H-BT, but:
- Horizontal orientation (W × H × D): 200 × 140 × 60 mm
- Without Bluetooth
- 1× Inputs for microphone, with switchable phantom power
- 3× Inputs for AUX signals

Version

APS-440-A01-V Product features such as APS-440-A01-H, but: - Vertical orientation (W × H × D): 140 × 200 × 60 mm		63-1307552-01-01
APS-440-A02-H Remote control unit horizontal, Product features such as APS-440-A01-H but: - Horizontal orientation (W × H × D): 200 × 140 × 60 mm - 2× Inputs for microphone, with switchable phantom power - 2× Inputs for AUX signals		63-1307739-01-01
APS-440-A02-V Product features such as APS-440-A02-H, but: - Vertical orientation (W × H × D): 140 × 200 × 60 mm		63-1307756-01-01
Option: APS-44X-OPT-BT - Bluetooth receiver		63-1311544-01-01

Digital volume remote control, RC16 — 63-1309250-01-01

GM-7420-ED-61

Digital volume remote control for modules with RC16, Edizio

- Operation of either 7 groups or 4 channels
- Communication via RC16

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

Technical data

Interface	RC16
Digital outputs	Galvanically isolated, voltage range 5–24 VDC
Max. number of bus participants	16
Volume range	-100 to +6 dB
Power supply	10–30 VDC
Current consumption	12 mA (17V)
Dimensions (W × H × D)	88 × 88 × 10 mm
Weight	0,075 kg
Surface front	White RAL 9010

Version

GM-7420-GIRA-55 Dig. volume remote control Product features such as GM-7420-ED-61, but: - GIRA Version		63-1709458-01-01

Remote control with 4 keys, RC16 — 63-1309484-01-01

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

GM-7421-ED-61-IO2

Remote control of switching functions for modules with RC16

- Operation of 4 switching functions
- Communication via RC16
- Connector block or digital inputs/outputs

Technical data

Digital input	Push-button or voltage input, 5–24 VDC, galvanically insulated
Digital outputs	Galvanically isolated, voltage range 5–24 VDC
Max. number of bus participants	16
Power supply	10–30 VDC
Current consumption	12 mA (17V)
Dimensions (W × H × D)	88 × 88 × 10 mm
Weight	0,075 kg
Surface front	White RAL 9010

Version

GM-7421-GIRA-55-IO2 — 63-1309485-01-01
Dig. volume remote control
Product features such as GM-7420-ED-61, but:
- GIRA Version

Remote control with source selection and volume adjustment, RC16 — 63-1311249-01-01

RC16: Powerful remote control function and visualization capability in combination with other RC16 bus subscribers

GM-7422

Remote control with source selection and volume adjustment, Edizio

- Control up to 16 volume levels
- Optional source selection

Technical data

Interface	RC16
Max. number of bus participants	16
Volume range	-100 to +6 dB
Power supply	10–30 VDC
Current consumption	28 mA
Dimensions (W × H × D)	88 × 88 × 10 mm
Weight	0,075 kg
Surface front	White RAL 9010

Version

GM-7422-AP Dig. volume remote control Product features such as GM-7422, but: -Surface mounting		63-1311884-01-01

Volume control, flush-mount — 63-1711164-01-01

GM-7100-ED

Volume control

- 10 Positions, switch off

Please note:
For EN 54-16 fullfillement use APS-74.1 module to bypass the volume control

Technical data

Power	100 Watt
Input	100 V
Regulation	Up to 100 Watt
Control range	33 dB
Power supply	15 VDC over APS-04 or APS 11-4
Dimensions (W × H × D)	88 × 88 × 48 mm
Weight	0,075 kg
Surface front	White

Version

GM-7112 Remote control unit Product features such as GM-7100-ED, but: - Regulation up to 12 Watt		63-1708921-01-01
GM-7130 Remote control unit Product features such as GM-7100-ED, but: - Regulation up to 30 Watt		63-1700987-01-01
GM-7150 Remote control unit Product features such as GM-7100-ED, but: - Regulation up to 50 Watt		63-1708922-01-01
GM-7150-ED Remote control unit Product features such as GM-7100-ED, but: - Regulation up to 50 Watt - Edizio Version		63-6112194-01-01

Volume control, flush-mount — 63-1700990-01-01

Please note:
For EN 54-16 fullfillement use APS-74.1 module to bypass the volume control

GM-7135

Volume control

- 10 Positions, switch off

Technical data

Power	12 Watt
Input	100 V
Regulation	Up to 12 Watt
Control range	33 dB
Power supply	15 VDC over APS-04 or APS 11-4
Dimensions (W × H × D)	88 × 88 × 48 mm
Weight	0,075 kg
Surface front	White

Volume control, Audio channel selector, flush-mount — 63-1708923-01-01

Please note:
For EN 54-16 fullfillement use APS-74.1 module to bypass the volume control

GM-7256

Volume controller and Audio channel selector

- 10 Positions, switch off

Technical data

Input	6 × 100 Watt
Regulation	Up to 50 Watt
Control range	33 dB
Power supply	10–30 VDC
Current consumption	28 mA
Dimensions (W × H × D)	80 × 154 × 50 mm
Weight	0,11 kg
Surface front	White

3.2.1 Accessories Remote control units

Surface-mounted metal frame for Remote control unit — 63-1305930-01-01

APS-458

Robust surface-mounted metal frame for mounting the remote control units APS-440-xx

Technical data

Dimensions (W × H × D)	137 × 197 × 45 mm
Weight	0,5 kg
Material	Metal, varnished
Colour	White

Surface-mounted metal frame for Remote control unit — 63-1308530-01-01

APS-476

Robust surface-mounted metal frame for mounting the remote control units APS-440-xx

Technical data

Dimensions (W × H × D)	300 × 400 × 150 mm
Weight	5,5 kg
Material	Metal, varnished
Colour	White

Flush-mounted metal housing for remote control unit — 63-5510444-01-01

APS-478

Built-in cabinet in weatherproof, stable metal construction for the APS-440-xx remote control units. With lockable, solid metal lid

Technical data

Dimensions (W × H × D)	350 × 450 × 70 mm
Weight	2 kg
Material	Sheet steel, coated
Colour	Grey

Flush-mounted box for all APS-440 versions — 63-2600101-01-01

UP-D for APS-440

Flush-mounted box for installation of all remote control units APS-440-xx

Technical data

Dimensions (W × H × D)	190 × 130 × 70 mm

3.3 Music player / Music source

Internetradio with FM / RDS / DAB / DAB+, USB- and AUX-Input, Bluetooth — 63-6112183-01-01

GM-1525-B

Internet Radio with access to over 20'000 stations. Music player allowing easy navigation and playback through a USB or network-stored library of music files including AAC / AAC+, MP3, WMA, WAV

- DAB / DAB+ digital radio with a wide choice of channels and digital quality sound broadcast
- FM with RDS (Radio Data System), Bluetooth receiver
- AUX in for external music sources such as MP3 players

Network:
- Wired router and an Ethernet (RJ45 network) cable
- Wi-Fi wireless router, together with password key if set

Scope of delivery:
Antenna, cabel Cinch / Cinch and 230 VAC, remote control

Connection to input module APS-02

Technical data

Connections	Ethernet RJ45, FM antenna, USB in, AUX in, Line out, headphone output, RS-232, Bluetooth
Power supply	230 V AC
Power consumption in operation	50 VA
Operating temperature	0 °C to 40 °C
Dimensions (W × D × H)	438 × 44 × 275 mm (19"-installation, 1 U)
Weight	3,4 kg

CD and MP3-Player with USB interface and Bluetooth — 63-2111879-01-01

GM-1523

CD and MP3-Player with USB interface and Bluetooth receiver

- CD / CD-R / CD-RW / MP3-CD Player with anti-shock, autoplay function, folder navigation, title programming, repeat functions
- USB storage media directly connectable (support up to 64 GB), Bluetooth receiver

Scope of delivery:
Cabel Cinch / Cinch and 230 V AC, Remote control

Connection to input module APS-02

Technical data

Connections	USB in, Line out, RS-232, Bluetooth
Power supply	230 V AC
Power consumption in operation	45 VA
Operating temperature	0 °C to 40 °C
Dimensions (W × D × H)	483 × 44 × 225 mm
Weight	4,4 kg

Versions Bluetooth

Blue 1	63-2111879-01-01
Blue 2	63-2111879-02-01
Blue 3	63-2111879-03-01
Blue 4	63-2111879-04-01

4. Loudspeakers

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4. Loudspeakers

4.1 Overview loudspeakers

We offer a wide range of different loudspeakers for different applications. Each of the following loudspeaker categories includes EN 54 certified loudspeakers that are approved for Voice alarm systems (VACIE) and those without certification that are used for PA Systems and Sound systems for emergency purposes (SSEP). The portfolio comprises the following product families:

Ceiling loudspeakers

A/B loudspeakers

Cabinet loudspeakers

Pendant loudspeakers

Horn loudspeakers

Column loudspeakers

Sound projectors

Loop loudspeakers

4.2 Loudspeakers according to EN 54-24 standard

4.2.1 Ceiling loudspeakers

Ceiling speaker, round, 6 W, 100 V, EN 54-24 — 63-1710622-01-01

GM-3305-EN5424

Ceiling loudspeaker with fire dome

- Plastic housing incl. fire pot made of plastic ABS
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Standard EN 54-24

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	140–16'000 Hz
Sensitivity (1 W/1 m)	91,3 dB
Sensitivity (1 W/4 m)	77,9 dB
Maximum SPL (6 W/1 m)	99,1 dB
Maximum SPL (6 W/4 m)	85,7 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/180°/68° Horizontal 180°/180°/180°/68° Vertical
Material	Plastic ABS 765A
Dimensions (Ø × T)	185 × 120 mm
Cutout (Ø)	165 mm
Mounting	Spring catch
Protection	IP44
Weight	0,8 kg
Colour	Signal white RAL 9003

Ceiling speaker, round, 10 W, 100 V, EN 54-24 seawater resistant

63-xxx-01-01

Standard EN 54-24

GM-3311-EN54

Ceiling loudspeaker, seawater resistant

- Seawater resistant
- UV resistant
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	42–25'000 Hz
Sensitivity (1 W/4 m)	76,8 dB
Maximum SPL (1 W/1 m)	94,9 dB
Maximum SPL (1 W/4 m)	82,9 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/128°/82° Horizontal 180°/180°/128°/82° Vertical
Material	Plastic ABS
Dimensions (Ø × T)	220 × 82 mm
Cutout (Ø)	180 mm
Mounting	Spring snap lock
Protection	IP54
Weight	1,2 kg
Colour	White RAL 9016

Ceiling loudspeaker, round, 100 V, 6 W, EN 54-24

63-1710073-01-01

Standard EN 54-24

GM-3405-EN5424

Ceiling loudspeaker with fire dome

- Housing with fire dome made of metal
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	340–20'000 Hz
Sensitivity (1 W/1 m)	93,8 dB
Sensitivity (1 W/4 m)	78,9 dB
Maximum SPL (6 W/1 m)	101,6 dB

Technical data

Maximum SPL (6 W/4 m)	84,0 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/150°/70° Horizontal 180°/180°/150°/70° Vertical
Material	Metal
Dimensions (Ø × T)	199 × 100 mm
Cutout (Ø)	185 mm
Mounting	Spring catch
Protection	IP21C
Weight	1,03 kg
Colour	Signal white RAL 9003

Ceiling loudspeaker, round, 100 V, 6 W, EN 54-24 — 63-2411410-01-01

GM-3461-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Standard EN 54-24, BS 5839

Technical data

Loudspeaker system	1 way
Nenn-Rauschleistung	6/3/1,5 Watt
Frequency range (-10 dB)	350–13'800 Hz
Sensitivity (1 W/4 m)	80,0 dB
Maximum SPL (1 W/1 m)	98,4 dB
Maximum SPL (1 W/4 m)	86,4 dB
Maximum SPL (Pmax/4 m)	94,1 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/120°/65° Horizontal 180°/180°/120°/65° Vertical
Material	Metal
Dimensions (Ø × T)	180 × 106 mm
Cutout (Ø)	167 mm
Mounting	Spring catch
Protection	IP21
Weight	1,17 kg
Colour	Pure white RAL 9010

Ceiling loudspeaker, round, 100 V, 6 W, EN 54-24 — 63-2411411-01-01

Standard EN 54-24, BS 5839

GM-3462-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	404–10'100 Hz
Sensitivity (1 W/4 m)	81 dB
Maximum SPL (1 W/1 m)	102,5 dB
Maximum SPL (1 W/4 m)	90,5 dB
Maximum SPL (Pmax/4 m)	98,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/175°/100°/50° Horizontal 180°/175°/100°/50° Vertical
Material	Metal
Dimensions (Ø × T)	220 × 112 mm
Cutout(Ø)	198 mm
Mounting	Spring catch
Protection	IP55
Weight	1,36 kg
Colour	Pure white RAL 9010

Ceiling loudspeaker, round, 100 V, 6 W, EN 54-24 — 63-2411412-01-01

Standard EN 54-24, BS 5839

GM-3463-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	326–19'200 Hz
Sensitivity (1 W/4 m)	84,7 dB
Maximum SPL (1 W/1 m)	102,0 dB

Technical data	
Maximum SPL (1 W/4 m)	90,0 dB
Maximum SPL (Pmax/4 m)	97,7 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/75°/58° Horizontal 180°/180°/75°/58° Vertical
Material	Metal
Dimensions (Ø × T)	267 × 135.5 mm
Cutout (Ø)	243 mm
Mounting	Spring catch
Protection	IP21
Weight	2,06 kg
Colour	Pure white RAL 9010

Ceiling loudspeaker, round, 100 V, 10 W, EN 54-24 — 63-2411413-01-01

GM-3464-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Standard EN 54-24, BS 5839

Technical data	
Loudspeaker system	1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	374–23'400 Hz
Sensitivity (1 W/4 m)	81,5 dB
Maximum SPL (1 W/1 m)	100,5 dB
Maximum SPL (1 W/4 m)	88,5 dB
Maximum SPL (Pmax/4 m)	97,7 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/94°/50° Horizontal 180°/180°/94°/50° Vertical
Material	Metal
Dimensions (Ø × T)	220 × 112 mm
Cutout (Ø)	201 mm
Mounting	Spring catch
Protection	IP21
Weight	1,48 kg
Colour	Pure white RAL 9010

Ceiling loudspeaker, round, 100 V, 10 W, EN 54-24 — 63-2411414-01-01

Standard EN 54-24, BS 5839

GM-3465-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	243–19'700 Hz
Sensitivity (1 W/4 m)	84,0 dB
Maximum SPL (1 W/1 m)	102,9 dB
Maximum SPL (1 W/4 m)	90,9 dB
Maximum SPL (Pmax/4 m)	100,9 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/145°/70°/45° Horizontal 180°/145°/70°/45° Vertical
Material	Metal
Dimensions (Ø × T)	267 × 138 mm
Cutout (Ø)	243 mm
Mounting	Spring catch
Protection	IP21
Weight	2.19 kg
Colour	Pure white RAL 9010

Ceiling loudspeaker, round, 100 V, 20 W, EN 54-24 — 63-2411415-01-01

Standard EN 54-24, BS 5839

GM-3467-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	20/15/10/5 Watt
Frequency range (-10 dB)	370–16'800 Hz
Sensitivity (1 W/4 m)	80,0 dB
Maximum SPL (1 W/1 m)	104,2 dB

Technical data	
Maximum SPL (1 W/4 m)	92,5 dB
Maximum SPL (Pmax/4 m)	105,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/175°/130°/65° Horizontal 180°/175°/130°/65° Vertical
Material	Metal
Dimensions (Ø × T)	180 × 132 mm
Cutout (Ø)	169 mm
Mounting	Spring catch
Protection	IP21
Weight	1,17 kg
Colour	Pure white RAL 9010

Ceiling loudspeaker, round, 100 V, 20 W, EN 54-24 — 63-2411416-01-01

GM-3469-EN54

Ceiling loudspeaker with fire dome

- Housing with metal fire dome
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Standard EN 54-24, BS 5839

Technical data	
Loudspeaker system	1 way
Nominal noise power 100 V	20/15/10/5 Watt
Frequency range (-10 dB)	188–16'100 Hz
Sensitivity (1 W/4 m)	78,6 dB
Maximum SPL (1 W/1 m)	94,1 dB
Maximum SPL (1 W/4 m)	82,1 dB
Maximum SPL (Pmax/4 m)	95,1 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	80°/180°/94°/55° Horizontal 180°/180°/94°/55° Vertical
Material	Metal
Dimensions (Ø × T)	267 × 194 mm
Cutout(Ø)	243 mm
Mounting	Spring catch
Protection	IP21
Weight	3,04 kg
Colour	Pure white RAL 9010

A/B-Ceiling loudspeaker, round, 100 V, 2 × 6 W, EN 54-24 — 63-1710940-01-01

Standard EN 54-24, BS 5839

GM-3445-AB-EN54

A/B Ceiling loudspeaker

- Housing with metal fire dome
- 2 separate lines allow the supply of both loudspeakers
- For background music and speech reproduction

Technical data

Loudspeaker system	2 × 1 way
Nominal noise power 100 V	2 × 6/3/1,5 Watt
Frequency range (-10 dB)	162–18'600 Hz (single), 159–16'000 Hz (double)
Sensitivity (1 W/4 m)	77,8 dB (single), 80,8 dB (double)
Maximum SPL (6 W/1 m)	106 dB (single), 112 dB (double)
Maximum SPL (6 W/4 m)	94 dB (single), 100,5 dB (double)
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/80°/71° Horizontal 180°/180°/70°/32° Vertical
Material	Powder coated metal
Dimensions (Ø × T)	267 × 138 mm
Cutout (Ø)	243 mm
Mounting	Spring catch
Protection	IP21
Weight	2,2 kg
Colour	Pure white RAL 9010

4.2.2 Cabinet loudspeakers

Cabinet loudspeaker, square, 100 V, 6 W, EN 54-24 — 63-1710527-01-01

GM-5020-EN5424

Cabinet loudspeaker for wall or ceiling mounting, square

- Metal housing
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Standard EN 54-24

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	190–18'000 Hz
Sensitivity (1 W/1 m)	92,2 dB
Sensitivity (1 W/4 m)	75,5 dB
Maximum SPL (6 W/1 m)	100,0 dB
Maximum SPL (6 W/4 m)	83,3 dB
Material	Metal
Dimensions (W × H × D)	195 × 195 × 80 mm
Mounting	Screws
Protection	IP44
Weight	2,6 kg
Colour	Signal white RAL 9003

Cabinet loudspeaker, round, 10 W, EN 54-24 — 63-1710166-01-01

Standard EN 54-24

Important notes:
Including mounting bracket

GM-5220-EN5424

Cabinet loudspeaker for wall or ceiling mounting

- Housing and front grille made of metal
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	225–22'200 Hz
Sensitivity (1 W/1 m)	100,6 dB
Sensitivity (1 W/4 m)	80,1 dB
Maximum SPL (10 W/1 m)	110,6 dB
Maximum SPL (10 W/4 m)	89,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/175°/102.5°/65° Horizontal 180°/175°/102.5°/65° Vertical
Material	Metal
Dimensions (Ø × T)	170 × 75 mm
Mounting	Screws
Protection	IP44
Weight	1,2 kg
Colour	Pure white RAL 9010

A/B-Cabinet loudspeaker, round, 2 × 6 W, EN 54-24 — 63-1711514-01-01

Standard EN 54-24

Important notes:
Including mounting bracket

GM-5220-AB-EN5424

A/B Cabinet loudspeaker for wall or ceiling mounting

- Two separate lines allow the supply of both loudspeakers
- Integrated ceramic terminal and thermal fuse
- Housing and front grille made of metal
- For background music and speech reproduction

Technical data

Loudspeaker system	2 × 1 way
Nominal noise power 100 V	2 × 6/3/1,5 Watt
Frequency range (-10 dB)	375–17'000 Hz
Sensitivity (1 W/1 m)	93.1 dB
Sensitivity (1 W/4 m)	73 dB (single), 79 dB (double)
Maximum SPL (1 W/1 m)	100,9 dB

Technical data

Maximum SPL (1 W/4 m)	80 dB (single), 86 dB (double)
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/175°/145°/110° (single) Horizontal 180°/170°/175°/45° (double) Horizontal 180°/180°/145°/110° (single) Vertical 180°/180°/115°/115° (double) Vertical
Material	Metal
Dimensions (Ø × T)	170 × 75 mm
Mounting	Screws
Protection	IP21
Weight	1.5 kg
Colour	Pure white, RAL 9010

Cabinet loudspeaker, square, 6 W, EN 54-24 — 63-1710072-01-01

GM-5600-EN5424

Cabinet loudspeaker for wall or ceiling mounting

- Rectangular MDF wood housing with snap lock
- Prepared cable feed-through for easy click and screw mounting
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Standard EN 54-24

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	170–20'000 Hz
Sensitivity (1 W/1 m)	95,7 dB
Sensitivity (1 W/4 m)	79,9 dB
Maximum SPL (6 W/1 m)	103,5 dB
Maximum SPL (6 W/4 m)	87,6 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/70°/110°/60° Horizontal 180°/80°/100°/50° Vertical
Dimensions (W × H × D)	192 × 252 × 82 mm
Material	MDF
Mounting	Screws
Protection	IP44
Weight	1,8 kg
Colour	Signal white RAL 9003

A/B-Cabinet loudspeaker, square, 2 × 6 W, EN 54-24 — 63-1710885-01-01

Standard EN 54-24

GM-5600-AB-EN54

A/B Cabinet loudspeaker for wall or ceiling mounting

- Rectangular MDF wood housing with snap lock
- Prepared cable feed-through for easy click and screw mounting
- Integrated ceramic terminal and thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	2 × 1 way
Nominal noise power 100 V	2 × 6/3/1,5 Watt
Frequency range (-10 dB)	200–12'000 Hz
Sensitivity (1 W/1 m)	94.6 dB (single)
Sensitivity (1 W/4 m)	86 dB (single)
Maximum SPL (6 W/1 m)	105.4 dB (single)
Maximum SPL (6 W/4 m)	96.8 dB (single)
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	245°/125°/70°/35° (single) Horizontal 290°/160°/90°/45° (single) Vertical
Dimensions (W × H × D)	194 × 253 × 80 mm
Material	MDF Wood housing
Mounting	Screws
Protection	IP44
Weight	2 kg
Colour	Signal white RAL 9003

4.2.3 Boxes Indoor

Boxes, Indoor, 15 W, EN 54-24

63-2411789-01-01 (Black)
63-2411790-01-01 (White)

GM-8215-SW-EN54 (Black) | GM-8215-WS-EN54 (White)

Monitorbox 15 Watt in White oder Black

- Impact-resistant, UV-resistant ABS plastic housing
- Integrated thermal fuse
- Loudspeaker chassis impregnated against moisture
- Very good sound image

Standard EN 54-24

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	15 / 7,5 / 3,75 / 1,8 Watt
Frequency range (-10 dB)	82–23'500 Hz
Sensitivity (1 W / 1 m)	82,5 dB
Sensitivity (1 W / 4 m)	70,5 dB
Maximum SPL (1 W / 1 m)	89,1 dB
Maximum SPL (1 W / 4 m)	77,1 dB
Coverage angle (-6 dB) (0,5 / 1 / 2 / 4 kHz)	360° / 186° / 132° / 147° Horizontal 360° / 186° / 115° / 197° Vertical
Dimensions (W × H × D)	210 × 130 × 120 mm
Material	Plastic ABS, UV resistant
Mounting	Swivel
Protection	IP65
Weight	1,75 kg
Colour	White or Black

Boxen, Indoor, 30 W, EN 54-24

63-2411791-01-01 (Black)
63-2411792-01-01 (White)

Standard EN 54-24

GM-8230-SW-EN54 (Black) | GM-8230-WS-EN54 (White)

Monitorbox 30 Watt in Black or White

- Impact-resistant, UV-resistant ABS plastic housing
- Integrated thermal fuse
- Loudspeaker chassis impregnated against moisture
- Very good sound image

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	30/15/7,5/2,5 Watt
Frequency range (-10 dB)	50–23'500 Hz
Sensitivity (1 W/1 m)	85,0 dB
Sensitivity (1 W/4 m)	73,0 dB
Maximum SPL (1 W/1 m)	90,9 dB
Maximum SPL (1 W/4 m)	78,9 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz	360°/203°/101°/288° Horizontal 360°/153°/133°/196° Vertical
Dimensions (W × H × D)	262 × 160 × 153 mm
Material	IP65
Mounting	Swivel
Protection	IP65
Weight	2,5 kg
Colour	White or Black

Boxen, Indoor, 50 W, EN 54-24

63-2411793-01-01 (Black)
63-2411794-01-01 (White)

Standard EN 54-24

GM-8250-SW-EN54 (Black) | GM-8250-WS-EN54 (White)

Monitorbox 50 Watt in black or White

- Impact-resistant, UV-resistant ABS plastic housing
- Integrated thermal fuse
- Loudspeaker chassis impregnated against moisture
- Very good sound image

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	50/25/12,5/6,25 Watt
Frequency range (-10 dB)	53–20'300 Hz

Technical data	
Sensitivity (1 W/1 m)	88,7 dB
Sensitivity (1 W/4 m)	76,7 dB
Maximum SPL (1 W/1 m)	88,2 dB
Maximum SPL (1 W/4 m)	76,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz	194°/152°/97°/64° Horizontal 185°/114°/103°/43° Vertical
Dimensions (W × H × D)	330 × 205 × 192 mm
Material	IP65
Mounting	Swivel
Protection	IP65
Weight	3,65 kg
Colour	White or Black

4.2.4 Boxes, Outdoor

Box, Outdoor, 50 W, EN 54-24 — 63-2420124-01-01

Shadow-105CT-EN54

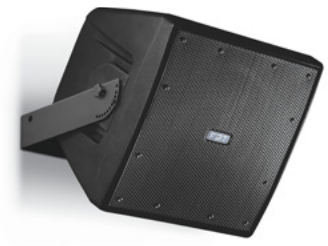
All-weather loudspeaker

- Suitable for sports fields, swimming pools, theme parks, restaurants etc.
- Impact resistant, UV and weather resistant plastic housing

Standard EN 54-24

Technical data	
Loudspeaker system	2 way
Nominal noise power 100 V	50/25 Watt
Frequency range (-10 dB)	100–18'000 Hz
Sensitivity (1 W/1 m)	87,5 dB
Maximum SPL (1 W/1 m)	104 dB
Maximum SPL (1 W/4 m)	92 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/140°/80°/95° Horizontal 160°/110°/70°/40° Vertical
Recommended HP Filter	80 Hz – 24 dB oct.
Dimensions (W × H × D)	168 × 222 × 200 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP55
Weight	3,5 kg
Colour	Black

Box, Outdoor, 120 W, EN 54-24 — 63-2420125-01-01



Standard EN 54-24

Shadow-108CT-EN54

All-weather loudspeaker

- Suitable for sports fields, swimming pools, theme parks, restaurants etc.
- Impact resistant, UV and weather resistant plastic housing

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	120/60 Watt
Frequency range (-10 dB)	94–20'000 Hz
Sensitivity (1 W/1 m)	94 dB
Maximum SPL (1 W/1 m)	115 dB
Maximum SPL (1 W/4 m)	103 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	160°/100°/90°/80° Horizontal 160°/100°/90°/80° Vertical
Dimensions (W × H × D)	285 × 285 × 250 mm
Recommended HP Filter	70 Hz – 24 dB oct.
Material	Plastic
Mounting	Mounting brackets
Protection	IP55
Weight	7 kg
Colour	Black

Box, Outdoor, 200 W, EN 54-24 — 63-2420126-01-01

Standard EN 54-24

Shadow-112CT-EN54

All-weather loudspeaker

- Suitable for sports fields, swimming pools, theme parks, restaurants etc.
- Impact resistant, UV and weather resistant plastic housing

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	200/100 Watt
Frequency range (-10 dB)	68–20'000 Hz
Sensitivity (1 W/1 m)	97,5 dB
Maximum SPL (1 W/1 m)	120 dB
Maximum SPL (1 W/4 m)	108 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	100°/90°/80°/50° Horizontal 100°/90°/80°/50° Vertical

Technical data	
Recommended HP Filter	50 Hz – 24 dB oct.
Dimensions (W × H × D)	430 × 430 × 400 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP55
Weight	15 kg
Colour	Black

4.2.5 Analogue Column loudspeakers

Analogue Column loudspeaker, 10 W, EN 54-24 — 63-2411404-01-01

GM-69-300-EN54

Weatherproof analogue sound column, equipped with 2 × 77 mm loudspeaker chassis

- Powder-coated, impact-resistant aluminium housing
- Integrated thermal fuse
- Connection via cable

Standard EN 54-24, BS 5839

Technical data	
Loudspeaker system	2 × 1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	210–17'700 Hz
Sensitivity (1 W/1 m)	89,2 dB
Sensitivity (1 W/4 m)	77,2 dB
Maximum SPL (1 W/1 m)	97,6 dB
Maximum SPL (1 W/4 m)	85,6 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz	360°/187°/149°/91° Horizontal 360°/108°/66°/32° Vertical
Dimensions (W × H × D)	100 × 260 × 92 mm
Material	Aluminium
Mounting	Swivel
Protection	IP66
Weight	0,7 kg
Colour	White aluminium RAL 9006

Analogue Column loudspeaker, 20 W, EN 54-24 — 63-2411405-01-01

Standard EN 54-24, BS 5839

GM-69-500-EN54

Weatherproof analogue sound column, equipped with 4 × 77 mm loudspeaker chassis

- Powder-coated, impact-resistant aluminium housing
- Integrated thermal fuse
- Connection via cable

Technical data

Loudspeaker system	4 × 1 way
Nominal noise power 100 V	20/15/10/5 Watt
Frequency range (-10 dB)	217–16'900 Hz
Sensitivity (1 W/1 m)	92,5 dB
Sensitivity (1 W/4 m)	80,5 dB
Maximum SPL (1 W/1 m)	100,3 dB
Maximum SPL (1 W/4 m)	88,3 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz	360°/188°/149°/86° Horizontal 124°/65°/38°/14° Vertical
Dimensions (W × H × D)	100 × 510 × 92 mm
Material	Aluminium
Mounting	Swivel
Protection	IP66
Weight	2,9 kg
Colour	White aluminium RAL 9006

Analogue Column loudspeaker, 30 W, EN 54-24 — 63-2410937-01-01

GM-69-700-EN54

Weatherproof analogue sound column, equipped with 6 × 77 mm loudspeaker chassis

- Powder-coated, impact-resistant aluminium housing
- Integrated thermal fuse
- Connection via cable

Standard EN 54-24, BS 5839

Technical data

Loudspeaker system	6 × 1 way
Nominal noise power 100 V	30 / 15 / 7,5 Watt
Frequency range (-10 dB)	230–16'500 Hz
Sensitivity (1 W / 1 m)	93 dB
Sensitivity (1 W / 4 m)	81 dB
Maximum SPL (1 W / 1 m)	101,3 dB
Maximum SPL (1 W / 4 m)	89,3 dB
Coverage angle (-6 dB) (0,5 / 1 / 2 / 4 kHz)	360° / 190° / 160° / 85° Horizontal 114° / 50° / 26° / 13° Vertical
Dimensions (W × H × D)	100 × 700 × 92 mm
Material	Aluminium
Mounting	Swivel
Protection	IP66
Weight	3,8 kg
Colour	White aluminium RAL 9006

Analogue Column loudspeaker, 50 W, EN 54-24 — 63-2410938-01-01

Standard EN 54-24, BS 5839

GM-69-1000-EN54

Weatherproof analogue sound column, equipped with 8 × 77 mm loudspeaker chassis

- Powder-coated, impact-resistant aluminium housing
- Integrated thermal fuse
- Connection via cable

Technical data

Loudspeaker system	8 × 1 way
Nominal noise power 100 V	50/30/15/7,5 Watt
Frequency range (-10 dB)	110–18'000 Hz
Sensitivity (1 W/1 m)	94,7 dB
Sensitivity (1 W/4 m)	82,7 dB
Maximum SPL (1 W/1 m)	102,8 dB
Maximum SPL (1 W/4 m)	90,8 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/186°/173°/98° Horizontal 73°/33°/17°/6° Vertical
Dimensions (W × H × D)	100 × 971 × 92 mm
Material	Aluminium
Mounting	Swivel
Protection	IP66
Weight	5,2 kg
Colour	White aluminium RAL 9006

Version

GM-69-2000-EN54 Analogue sound column Product features such as GM-69-1000-EN54: - 2 × 50 W - Dimensions (W × H × D) 100 × 1942 × 92 mm - Weight 10.2 kg	63-2411843-01-01
GM-69-3000-EN54 Analogue sound column Product features such as GM-69-1000-EN54, but: - 3 × 50 W - Dimensions (W × H × D) 100 × 2913 × 92 mm - Weight 15.3 kg	63-2411844-01-01

4.2.6 Pendant loudspeakers

Pendant loudspeaker, round, 6 W, 100 V, EN 54-24

63-1710455-01-01 (White)
63-1711149-01-01 (Black)

GM-6260-EN5424 (White) | GM-6260SW-EN5424 (Black)

Pendant loudspeaker for rooms with high ceilings

- Fire-protected, flame-retardant
- Equal sound reinforcement of the entire audio spectrum
- For background music and speech reproduction

Standard EN 54-24

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	30/20/10 Watt
Frequency range (-10 dB)	70–20'000 Hz
Sensitivity (1 W/1 m)	102,5 dB
Sensitivity (1 W/4 m)	80 dB
Maximum SPL (30 W/1 m)	115 dB
Maximum SPL (30 W/4 m)	96 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	188°/325°/106°/68° Horizontal 188°/325°/106°/66° Vertical
Material	Metal
Dimensions (Ø)	220 mm
Mounting	Mounting hook
Protection	IP44
Weight	2,4 kg
Colour	Pure white RAL 9010

Pendant loudspeaker, round, 10 W, 100 V, EN 54-24 — 63-1711149-01-01

Standard EN 54-24

GM-6261-EN54

Pendant loudspeaker for rooms with high ceilings

- Fire-protected, flame-retardant
- Equal sound reinforcement of the entire audio spectrum
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way, HF cone
Nominal noise power 100 V	10/6/3 Watt
Frequency range (-10 dB)	120–16'000 Hz
Sensitivity (1 W/1 m)	93 dB
Sensitivity (1 W/4 m)	78 dB
Maximum SPL (10 W/1 m)	103.dB
Maximum SPL (10 W/4 m)	89,3 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/360°/70°/52° Horizontal 360°/360°/70°/52° Vertical
Material	Metal
Dimensions (Ø)	180 mm
Mounting	Mounting hook
Protection	IP44
Weight	1,7 kg
Colour	Pure white RAL 9010

A/B-Pendant loudspeaker, round, 2 × 6 W, 100 V, EN 54-24

63-1711762-01-01

GM-6261-AB-EN54

A/B Pendant loudspeaker for rooms with high ceilings

- Fire-protected, flame-retardant
- Equal sound reinforcement of the entire audio spectrum
- For background music and speech reproduction

Standard EN 54-24

Technical data

Loudspeaker system	1 way, HF cone
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	80–17'000 Hz
Sensitivity (1 W/4 m)	73 dB (single), 79 dB (double)
Maximum SPL (1 W/1 m)	99 dB (double)

Technical data

Maximum SPL (6 W/1 m)	105.0 dB (double)
Maximum SPL (6 W/4 m)	82.0 dB (single), 88.0 dB (double)
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/330°/183°/77° Horizontal 360°/330°/183°/77° Vertical
Material	Metal
Dimensions (Ø)	180 mm
Mounting	Mounting hook
Protection	IP44
Weight	1.9 kg
Colour	Pure white RAL 9010

Pendant loudspeaker, round, 16 W, 100 V, EN 54-24 — 63-2410997-01-01

Standard EN 54-24, BS 5839

GM-6270-EN54

Pendant loudspeaker for rooms with high ceilings

- Robust, UV-resistant ABS housing guarantees long-term stability
- Simple and quick assembly with mounting hook
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	16/8/4 Watt
Frequency range (-10 dB)	130–13'300 Hz
Sensitivity (1 W/1 m)	85 dB
Sensitivity (1 W/4 m)	73 dB
Maximum SPL (1 W/1 m)	89,9 dB
Maximum SPL (10 W/4 m)	77,9 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/196°/132°/171° Horizontal 360°/196°/132°/171° Vertical
Material	Plastic ABS
Dimensions (Ø × T)	185 × 157 mm
Mounting	Mounting hook
Protection	IP35
Weight	1,50 kg
Colour	White

Pendant loudspeaker, round, 20 W, 100 V, EN 54-24 — 63-2410998-01-01

Standard EN 54-24, BS 5839

GM-6275-EN54

Pendant loudspeaker for rooms with high ceilings

- Robust, UV-resistant ABS housing guarantees long-term stability
- Simple and quick assembly with mounting hook
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	20/15/10/5/2,5 Watt
Frequency range (-10 dB)	128–17'900 Hz
Sensitivity (1 W/1 m)	91,5 dB
Sensitivity (1 W/4 m)	79,5 dB
Maximum SPL (1 W/1 m)	100,8 dB
Maximum SPL (1 W/4 m)	88,8 dB

Technical data	
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/163°/90°/40° Horizontal 360°/163°/90°/40° Vertical
Material	Plastic ABS
Dimensions (Ø × T)	260 × 245 mm
Mounting	Mounting hook
Protection	IP35
Weight	2,2 kg
Colour	Traffic white RAL 9016

4.2.7 Horn loudspeakers

Horn loudspeaker, round, 20 W, 100 V, EN 54-24 — 63-1710071-01-01

GM-8617-EN5424

Weatherproof, impact-resistant horn loudspeaker

- Integrated thermal fuse
- Very clear speech quality of announcements
- Very high efficiency for long ranges

Standard EN 54-24

Technical data	
Loudspeaker system	1 way
Nominal noise power 100 V	20/10/5/2,5 Watt
Frequency range (-10 dB)	699–5'531 Hz
Sensitivity (1 W/1 m)	105,8 dB
Sensitivity (1 W/4 m)	90,4 dB
Maximum SPL (20 W/1 m)	118,8 dB
Maximum SPL (20 W/4 m)	103,4 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/135°/75°/40° Horizontal 360°/135°/75°/40° Vertical
Material	Plastic ABS 757
Dimensions (Ø × T)	210 × 275 mm
Mounting	Mounting hook
Protection	IP66
Weight	2 kg
Colour	Light grey

Horn loudspeaker, round, 10 W, 100 V, EN 54-24 — 63-2411407-01-01

Standard EN 54-24, BS 5839

GM-8618-10-EN54

Weatherproof, impact-resistant horn loudspeaker

- Integrated thermal fuse
- Suitable for voice announcements in the industrial sector

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	10/5/2,5/1,25 Watt
Frequency range (-10 dB)	569–7'000 Hz
Sensitivity (1 W/1 m)	95 dB
Sensitivity (1 W/4 m)	83 dB
Maximum SPL (1 W/1 m)	106,7 dB
Maximum SPL (1 W/4 m)	94,7 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/360°/105°/50° Horizontal 360°/360°/105°/50° Vertical
Material	Plastic ABS
Dimensions (Ø × T)	142 × 208 mm
Mounting	Mounting brackets
Protection	IP66
Weight	1,8 kg
Colour	Light grey RAL 7035

Trichterlautprecher, round, 15 W, 100 V, EN 54-24 — 63-2411408-01-01

Standard EN 54-24, BS 5839

GM-8618-15-EN54

Weatherproof, impact-resistant horn loudspeaker

- Integrated thermal fuse
- Suitable for voice announcements in the industrial sector

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	15/7,5/3,75/1,9 Watt
Frequency range (-10 dB)	677–5'400 Hz
Sensitivity (1 W/1 m)	95,3 dB
Sensitivity (1 W/4 m)	83,3 dB
Maximum SPL (1 W/1 m)	108,5 dB

Technical data	
Maximum SPL (1 W/4 m)	96,5 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/110°/65°/35° Horizontal 360°/110°/65°/35° Vertical
Material	Plastic ABS
Dimensions (Ø × T)	209 × 273 mm
Mounting	Mounting brackets
Protection	IP66
Weight	2,10 kg
Colour	Light grey RAL 7035

Horn loudspeaker, round, 30 W, EN 54-24 — 63-2411409-01-01

GM-8618-30-EN54

Weatherproof, impact-resistant horn loudspeaker

- Integrated thermal fuse
- Suitable for voice announcements in the industrial sector

Standard EN 54-24, BS 5839

Technical data	
Loudspeaker system	1 way
Nominal noise power 100 V	30/20/10/5 Watt
Frequency range (-10 dB)	592–6'900 Hz
Sensitivity (1 W/1 m)	97,9 dB
Sensitivity (1 W/4 m)	85,9 dB
Maximum SPL (1 W/1 m)	110,1 dB
Maximum SPL (1 W/4 m)	98,1dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	155°/110°/65°/35° Horizontal 155°/110°/65°/35° Vertical
Material	Plastic ABS
Dimensions (Ø × T)	235 × 303 mm
Mounting	Mounting brackets
Protection	IP66
Weight	2,55 kg
Colour	Light grey RAL 7035

4.2.8 Sound projectors

Sound projcetor, 10 W, 100 V, EN 54-24 — 63-1711233-01-01

Standard EN 54-24

GM-4561-EN5424

Robust sound projector made of aluminium

- vandal-proof, robust aluminium housing
- Integrated thermal fuse
- Perfect for installation in corridors and aisles

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	237–12'400 Hz
Sensitivity (1 W/1 m)	77,6 dB
Sensitivity (1 W/4 m)	70,5 dB
Maximum SPL (1 W/1 m)	95,3 dB
Maximum SPL (1 W/4 m)	83,3 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	130°/150°/145°/75° Horizontal 130°/150°/145°/75° Vertical
Dimensions (B × H × T)	197 × 168 × 161 mm
Material	Aluminium
Mounting	Mounting brackets
Protection	IP65
Weight	2,35 kg
Colour	Pure white RAL 9010

Sound projector, 20 W, 100 V, EN 54-24 — 63-1710070-01-01

Standard EN 54-24

GM-6030-EN5424

Cylindrical sound projector with plastic housing

- Integrated thermal fuse
- The tweeter ensures good music and speech reproduction

Technical data

Loudspeaker system	1 way, Tweeter dome
Nominal noise power 100 V	20/10/5 Watt
Frequency range (-10 dB)	120–15'600 Hz
Sensitivity (1 W/1 m)	87,2 dB
Sensitivity (1 W/4 m)	77,1 dB
Maximum SPL (20 W/1 m)	100,2 dB

Technical data

Maximum SPL (20 W/4 m)	90,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/220°/110°/60° Horizontal 360°/220°/110°/60° Vertical
Dimensions (Ø × T)	138 × 203 mm
Material	Plastic ABS
Mounting	Mounting brackets
Protection	IP55
Weight	1,5 kg
Colour	Signal white RAL 9003

Sound projector, 20 W, 100 V, EN 54-24 — 63-1710078-01-01

GM-6040-EN5424

Cylindrical sound projector with plastic housing

- Integrated thermal fuse
- Good music and speech reproduction

Standard EN 54-24

Technical data

Loudspeaker system	2 way, coaxial
Nominal noise power 100 V	20/10/5 Watt
Frequency range (-10 dB)	20–15'700 Hz
Sensitivity (1 W/1 m)	91,2 dB
Sensitivity (1 W/4 m)	80 dB
Maximum SPL (20 W/1 m)	104.,3 dB
Maximum SPL (20 W/4 m)	93,1 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/200°/105°/60° Horizontal 360°/200°/105°/60° Vertical
Dimensions (Ø × T)	176 × 252 mm
Material	Plastic ABS 765A
Mounting	Mounting brackets
Protection	IP55
Weight	2,4 kg
Colour	Signal white RAL 9003

4.2.9 Loop

Loop, EN 54-24 — 63-1709224-01-01

GM-7179-BOX

Isolator for loop technology, built into plastic box

- Adapter for 100 V loudspeaker to loop line
- For operation with APS-180-LOOP

Loudspeaker, Loop, 6 W, 100 V, EN 54-24 — 63-1710175-01-01

GM-3405-7179EN54

Loudspeaker for use with APS-180-LOOP

- Integrated thermal fuse
- For operation with APS-180-LOOP
- For background music and speech reproduction

Standard EN 54-24

Important note:
Speaker is delivered with GM-7179-BOX

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	340–20'000 Hz
Sensitivity (1 W/1 m)	93,8 dB
Sensitivity (1 W/4 m)	78,9 dB
Maximum SPL (6 W/1 m)	101,6 dB
Maximum SPL (6 W/4 m)	86,7 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz	180°/180°/180°/70° Horizontal 180°/180°/180°/70° Vertical
Dimensions (Ø × T)	200 × 146 mm
Cutout(Ø)	185 mm
Material	Metal
Mounting	Spring catch
Protection	IP44
Weight	1,3 kg
Colour	Signal white RAL 9003

Loudspeaker, rectangular, Loop, 6 W, 100 V, EN 54-24 — 63-1710232-01-01

GM-5600-7179EN54

Surface mounted loudspeaker with wooden housing

- Prepared cable feed-through for easy click and screw mounting
- Integrated thermal fuse
- For background music and speech reproduction
- EN 54-24 certified speaker with GM-7179 speaker for use with APS-180-LOOP

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	170–20'000 Hz
Sensitivity (1 W/1 m)	95,7 dB
Sensitivity (1 W/4 m)	79,9 dB
Maximum SPL (6 W/1 m)	103,5 dB
Maximum SPL (6 W/4 m)	87,6 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz	80°/70°/110°/60° Horizontal 180°/80°/100°/50° Vertical
Dimensions (B × H × T)	192 × 252 × 82 mm
Material	MDF wood housing
Mounting	Screws
Protection	IP44
Weight	1,9 kg
Colour	Signal white RAL 9003

4.3 Loudspeakers without EN 54-24 standard

4.3.1 Ceiling loudspeakers

Ceiling loudspeaker with fire dome, 6 W, 100 V — 63-1710620-01-0

GM-3305

Ceiling loudspeaker with metal fire dome

- Integrated thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	140–16'000 Hz
Sensitivity (1 W/1 m)	91,3 dB
Sensitivity (1 W/4 m)	77,9 dB
Maximum SPL (6 W/1 m)	99,1 dB
Maximum SPL (6 W/4 m)	85,7 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/180°/68° Horizontal 180°/180°/180°/68° Vertical
Material	Plastic ABS 765A
Dimensions (Ø × T)	185 × 120 mm
Cutout(Ø)	165 mm
Mounting	Spring catch
Protection	IP44
Weight	0,8 kg
Colour	Signal white RAL 9003

Ceiling loudspeaker, 6 W, 100 V — 63-1710623-01-01

GM-3307

Ceiling loudspeaker with round front grill

- Integrated thermal fuse
- For background music and speech reproduction

Technical data

Lautsprecher-System	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	140–16'000 Hz

Technical data	
Sensitivity (1 W/1 m)	91,3 dB
Sensitivity (1 W/4 m)	77,9 dB
Maximum SPL (6 W/1 m)	99,1 dB
Maximum SPL (6 W/4 m)	85,7 dB
Coverage angle (1 kHz) (0,5/1/2/4 kHz)	180°/180°/180°/68° Horizontal 180°/180°/180°/68° Vertical
Material	Plastic ABS 765A
Dimensions (Ø × T)	185 × 120 mm
Cutout(Ø)	165 mm
Mounting	Spring catch
Protection	IP44
Weight	0,7 kg
Colour	Signal white RAL 9003

Ceiling loudspeaker mit fire dome, 6 W, 100 V — 63-1709272-01-01

GM-3405-EV

Ceiling loudspeaker with round front grill and fire dome

- Integrated thermal fuse
- For background music and speech reproduction

Technical data	
Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	340–15'000 Hz
Sensitivity (1 W/1 m)	93,8 dB
Maximum SPL (6 W/1 m)	101,6 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/180°/180°/70° Horizontal 180°/180°/180°/70° Vertical
Material	Metal
Dimensions (Ø × T)	200 × 130 mm
Cutout(Ø)	185 mm
Mounting	Spring catch
Protection	IP44
Weight	0,9 kg
Colour	Signal white RAL 9003

4.3.2 Cabinet loudspeakers

Cabinet loudspeaker, square, 6 W, 100 V — 63-1710529-01-01

GM-5020

Surface mounted loudspeaker with metal housing

- Integrated thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	2 way, coaxial
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	190–18'000 Hz
Sensitivity (1 W/1 m)	92,2 dB
Maximum SPL (6 W/1 m)	100 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	145°/95°/45° Horizontal 145°/95°/45° Vertical
Dimensions (W × H × D)	195 × 195 × 80 mm
Material	Metal
Mounting	Screws
Protection	IP44
Weight	2,6 kg
Colour	Signal white RAL 9003

Cabinet loudspeaker, round, 10 W, 100 V

63-1709110-01-01

GM-5220

Round cabinet loudspeaker with metal housing

- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	10/6/3/1,5 Watt
Frequency range (-10 dB)	230–18'000 Hz
Sensitivity (1 W/1 m)	98,6 dB
Maximum SPL (10 W/1 m)	108,6 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/75°/100°/60° Horizontal 180°/75°/100°/60° Vertical
Dimensions (Ø × T)	170 × 75 mm
Material	Metal
Mounting	Screws
Protection	IP44
Weight	1,1 kg
Colour	Pure white RAL 9010

Cabinet loudspeaker, rectangular, 6 W, 100 V — 63-1707778-01-01

GM-5600

Rectangular cabinet loudspeaker with wooden housing

- Integrated thermal fuse
- For background music and speech reproduction

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	6/3/1,5 Watt
Frequency range (-10 dB)	185–20'000 Hz
Sensitivity (1 W/1 m)	95,4 dB
Maximum SPL (6 W/1 m)	103,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	180°/70°/110°/60° Horizontal 180°/80°/100°/50° Vertical
Dimensions (W × H × D)	192 × 252 × 82 mm
Material	MDF wood housing
Mounting	Screws
Protection	IP44
Weight	1,8 kg
Colour	Signal white RAL 9003

4.3.3 Boxes, Indoor

Box, Indoor, 100 V

63-1708429-01-01 (White)
63-1708427-01-01 (Black)

GM-8110-SW (Black) | GM-8110-WS (White)

Hi-Fi compact system for surface, wall or ceiling mounting

- Very simple and fast installation
- Excellent quality of music and speech reproduction

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	16/8/4/2 Watt
Frequency range (-10 dB)	145–15'000 Hz
Sensitivity (1 W/1 m)	89 dB
Maximum SPL (16 W/1 m)	100,8 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/150°/65°/265° Horizontal 360°/180°/180°/90° Vertical
Dimensions (W × H × D)	145 × 205 × 140 mm
Material	Plastic ABS 765A
Mounting	Mounting brackets
Protection	IP44
Weight	1,5 kg
Colour	White, Black

Accessories

Ball-holder GM-81-SPB-WS, White, - For wall mounting	63-1708440-01-01
Ball-holder GM-81-SPB-SW, black, - For wall mounting	63-1708439-01-01

Box, Indoor, 100 V

63-1708433-01-01 (White)
63-1708431-01-01 (Black)

GM-8120-SW (Black) | GM-8120-WS (White)

Hi-Fi compact system for surface, wall or ceiling mounting

- Very simple and fast installation
- Excellent quality of music and speech reproduction

Technical data

Loudspeaker system	2 way, koaxial
Nominal noise power 100 V	20/10/5/2.5 Watt
Frequency range (-10 dB)	145–14'000 Hz
Sensitivity (1 W/1 m)	92,5 dB
Maximum SPL (20 W/1 m)	105,5 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/165°/75°/105° Horizontal 360°/200°/160°/84° Vertical
Dimensions (W × H × D)	170 × 240 × 165 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP44
Weight	2 kg
Colour	White, Black

Accessories

Ball-holder GM-81-SPB-WS, White, - For wall mounting	63-1708440-01-01
Ball-holder GM-81-SPB-SW, black, - For wall mounting	63-1708439-01-01

Box, Indoor, 100 V

63-1708437-01-01 (White)
63-1708435-01-01 (Black)

GM-8130-WS (White)

Hi-Fi compact system for surface, wall or ceiling mounting

- Very simple and fast installation
- Excellent quality of music and speech reproduction

Technical data

Loudspeaker system	2 way, koaxial
Nominal noise power 100 V	30/16/8/4 Watt
Frequency range (-10 dB)	120–15'200 Hz
Sensitivity (1 W/1 m)	91,8 dB
Maximum SPL (30 W/1 m)	104,8 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	200°/160°/90°/65° Horizontal 360°/160°/150°/50° Vertical
Dimensions (W × H × D)	205 × 285 × 190 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP44
Weight	3 kg
Colour	White, Black

Verison

GM-8130-WS

Product features such as GM-8130-SW, but:
- Nominal noise power 100 V: 20/15/5/2 Watt
- Colour: black

Accessories

Ball-holder GM-81-SPB-WS, White, - For wall mounting	63-1708440-01-01
Ball-holder GM-81-SPB-SW, black, - For wall mounting	63-1708439-01-01

4.3.4 Boxes Outdoor

Box, Outdoor, 50 W — 63-2420110-01-01

Shadow-105T

All-weather loudspeakers

- Suitable for sports fields, swimming pools, theme parks, restaurants etc.
- Impact-resistant, UV-resistant and weatherproof plastic housing

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	50/25 Watt
Frequency range (-10 dB)	90–20'000 Hz
Sensitivity (1 W/1 m)	89 dB
Maximum SPL (1 W/1 m)	112 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	100° conical
Recommended HP Filter	70 Hz – 24 dB oct.
Dimensions (W × H × D)	168 × 222 × 200 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP55
Weight	3,5 kg
Colour	Iron grey RAL 7011

Box, Outdoor, 100 W

63-2420111-01-01

Shadow-108CT

All-weather loudspeakers

- Suitable for sports fields, swimming pools, theme parks, restaurants etc.
- Impact-resistant, UV-resistant and weatherproof plastic housing

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	100/50 Watt
Frequency range (-10 dB)	80–20'000 Hz
Sensitivity (1 W/1 m)	95 dB
Maximum SPL (1 W/1 m)	124 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	90° conical
Recommended HP Filter	60 Hz – 24 dB oct.
Dimensions (W × H × D)	285 × 285 × 250 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP55
Weight	7 kg
Colour	Iron grey RAL 7011

Box, Outdoor, 200 W

63-2420112-01-01

Shadow-112CT

All-weather loudspeakers

- Suitable for sports fields, swimming pools, theme parks, restaurants etc.
- Impact-resistant, UV-resistant and weatherproof plastic housing

Technical data

Loudspeaker system	2 way
Nominal noise power 100 V	200 / 100 Watt
Frequency range (-10 dB)	70 – 20'000 Hz
Sensitivity (1 W / 1 m)	98 dB
Maximum SPL (1 W / 1 m)	128 dB
Coverage angle (-6 dB) (0,5 / 1 / 2 / 4 kHz)	90° conical
Recommended HP Filter	50 Hz – 24 dB oct.
Dimensions (W × H × D)	430 × 430 × 400 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP55
Weight	15 kg
Colour	Iron grey RAL 7011

4.3.5 Analogue column loudspeaker, passive

Analogue column speaker, passive, 40 W — 63-1710115-01-01

GM-6963-P

Analogue column loudspeaker, equipped with 16 × 80 mm loudspeaker chassis

- Directly installed 100 V transformer with various adaptation options
- Suitable for public buildings, churches, conference rooms etc.
- Simple mounting with bracket
- Waterproof and dustproof design IP54

Technical data

Loudspeaker system	2 way, passive
Nominal noise power 100 V	20/40/80 Watt
Frequency range (-10 dB)	114–20'000 Hz
Sensitivity (1 W/1 m)	93,8 dB
Maximum SPL (1 W/1 m)	112,8 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/215°/117°/126° Horizontal 360°/45°/24°/13° Vertical
Dimensions (W × H × D)	119 × 1612 × 132 mm
Material	Aluminium
Mounting	Mounting brackets
Protection	IP54
Weight	16,8 kg
Colour	Traffic white RAL 9016

4.3.6 Digital Column loudspeakers, active

Digital column loudspeaker, active — 63-2110130-01-01

AH1635

Digital column loudspeaker, equipped with 16 × 3.5" Full range Neodym-Chassis

- Directional sound radiation achieves excellent acoustic results even in difficult environments
- Suitable for public buildings, churches, conference rooms etc.
- Latest DSP technology
- Simple mounting with bracket
- Waterproof and dustproof design IP54

Technical data

Loudspeaker system	Active
Sound radiation	20–25 m
Frequency range (-10 dB)	80 Hz – 20 kHz
Sensitivity (1 W / 1 m)	88,7 dB
Maximum SPL	103 dB / 106 dB at 10 m 100 dB / 103 dB at 20 m 98 dB / 101 dB at 30 m
Tilting angle vertical	-60° to 60°
Opening angle vertical	16,9° to 40°
Dimensions (W × H × D)	116 × 1780 × 121 mm
Material	Aluminium
Mounting	Mounting brackets
Protection	IP54
Weight	8,2 kg
Colour	Pure white RAL 9010

Option:
- Dante, AES 67

Information:
- From 2020 also available as AH0835 with only 70 cm length

Digital column loudspeaker, active

63-2110133-01-01

AH2435

Digital column loudspeaker, equipped with 24 × 3.5" Full range Neodym-Chassis

- Directional sound radiation achieves excellent acoustic results even in difficult environments
- Suitable for public buildings, churches, conference rooms etc.
- Latest DSP technology
- Simple mounting with bracket
- Waterproof and dustproof design IP54

Technical data

Loudspeaker system	Active
Sound radiation	25–30 m
Frequency range (-10 dB)	80 Hz – 20 kHz
Sensitivity (1 W / 1 m)	88,7 dB
Maximum SPL	105 dB / 108 dB at 10 m 102 dB / 105 dB at 20 m 100 dB / 103 dB at 30 m 98 dB / 101 dB at 40 m
Tilting angle vertical	-60° to 60°
Opening angle vertical	11,9° to 40°
Dimensions (W × H × D)	116 × 2486 × 121 mm
Material	Aluminium
Mounting	Mounting brackets
Protection	IP54
Weight	12,2 kg
Colour	Pure white RAL 9010

Option:
- Dante, AES 67

Digital column loudspeaker, active — 63-2110134-01-01

AH3235

Digital column loudspeaker, equipped 32 × 3.5" Full range Neodym-Chassis

- Directional sound radiation achieves excellent acoustic results even in difficult environments
- Suitable for public buildings, churches, conference rooms etc.
- Latest DSP technology
- Simple mounting with bracket
- Waterproof and dustproof design IP54

Technical data

Loudspeaker system	Active
Sound radiation	30–35 m
Frequency range (-10 dB)	80 Hz – 20 kHz
Sensitivity (1 W / 1 m)	88,7 dB
Maximum SPL	105 dB / 108 dB at 10 m 103 dB / 106 dB at 20 m 102 dB / 105 dB at 30 m 100 dB / 103 dB at 40 m 98 dB / 101 dB at 50 m
Tilting angle vertical	-60° to 60°
Opening angle vertical	9° to 40°
Dimensions (W × H × D)	116 × 3204 × 121 mm
Material	Aluminium
Mounting	Mounting brackets
Protection	IP54
Weight	12,2 kg
Colour	Pure white RAL 9010

Option:
- Dante, AES 67

Versions

AH0835	(B × H × T) 116 × 700 × 121 mm
AH4035	(W × H × D) 116 × 4266 × 121 mm
AH4835	(W × H × D) 116 × 4972 × 121 mm
AH5635	(W × H × D) 116 × 5690 × 121 mm
AH6435	(W × H × D) 116 × 6408 × 121 mm

4.3.7 Pendant loudspeakers

Pendant loudspeaker, 35 W, 100 V

63-1710797-01-01 (White)
63-1710796-01-01 (Black)

GM-6300-EV-SW (Black) | GM-6300-EV-WS (White)

Loudspeaker for rooms with high ceilings

- Integrated thermal fuse
- Very simple and fast assembly
- Excellent music and speech intelligibility

Technical data

Loudspeaker system	2 way, bass reflex
Nominal noise power 100 V	16/8/4 Watt
Frequency range (-10 dB)	73–20'000 Hz
Sensitivity (1 W/1 m)	89 dB
Maximum SPL (16 W/1 m)	102,5 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	250°/130°/90°/60° Horizontal 250°/130°/90°/60° Vertical
Dimensions (Ø × T)	255 × 315 mm
Material	Plastic ABS
Mounting	Mounting hook
Protection	IP44
Weight	3 kg
Colour	White or Black

Accessories

GM-63xx-Wall-SW (black) - For wall mounting	63-1710798-01-01
GM-63xx-Wall-WS (White) - For wall mounting	63-1710799-01-01

Pendant loudspeaker, 20 W, 100 V

63-1711527-01-01 (White)
63-1711526-01-01 (Black)

GM-6310-EV-SW (Black) | GM-6310-EV-WS (White)

Loudspeaker for rooms with high ceilings

- Integrated thermal fuse
- Very simple and fast assembly
- Excellent music and speech intelligibility

Technical data

Loudspeaker system	2 way, bass reflex
Nominal noise power 100 V	20 / 10 / 5 / 2,5 Watt
Frequency range (-10 dB)	78–20'000 Hz
Sensitivity (1 W / 1 m)	85,4 dB
Maximum SPL (20 W / 1 m)	98,4 dB
Coverage angle (-6 dB) (0,5 / 1 / 2 / 4 kHz)	360° / 160° / 107° / 82° Horizontal 360° / 160° / 107° / 82° Vertical
Dimensions (Ø × T)	190 × 230 mm
Material	Plastic ABS 765A
Mounting	Mounting hook
Protection	IP44
Weight	2 kg
Colour	White or Black

Accessories

GM-63xx-Wall-SW (black) - For wall mounting	63-1710798-01-01
GM-63xx-Wall-WS (White) - For wall mounting	63-1710799-01-01

4.3.8 Horn loudspeakers

Horn loudspeaker, round, 20 W, 100 V — 63-1707675-01-01

GM-8617

Weatherproof, impact-resistant, round horn loudspeaker

- Integrated thermal fuse
- Very clear playback quality of voice announcements
- Very high efficiency for long ranges

Technical data

Loudspeaker system	1 way
Nominal noise power 100 V	20/10/5/2,5 Watt
Frequency range (-10 dB)	680–6'300 Hz
Sensitivity (1 W/1 m)	104,2 dB
Maximum SPL (20 W/1 m)	117,2 dB
Coverage angle (-6 dB) (0,5/1/2/4 kHz)	360°/135°/75°/40° Horizontal 360°/135°/75°/40° Vertical
Dimensions (Ø × T)	210 × 275 mm
Material	Plastic
Mounting	Mounting brackets
Protection	IP66
Weight	2 kg
Colour	Light grey

4.3.9 Sound projectors

Sound projector, round, 20 W, 100 V — 63-1707007-01-01

GM-6030-EV

Cylindrical sound projector with plastic housing

- Integrated thermal fuse
- The high-frequency system ensures good music and speech reproduction

Technical data

Loudspeaker system	1 way, Tweeter dome
Nominal noise power 100 V	20 / 10 / 5 Watt
Frequency range (-10 dB)	120–15'600 Hz
Sensitivity (1 W / 1 m)	87,2 dB
Maximum SPL (20 W / 1 m)	100,2 dB
Coverage angle (-6 dB) (0,5 / 1 / 2 / 4 kHz)	360° / 220° / 110° / 60° Horizontal 360° / 220° / 110° / 60° Vertical
Dimensions (Ø × T)	138 × 203 mm
Material	Plastic ABS 765A
Mounting	Mounting brackets
Protection	IP55
Weight	1,5 kg
Colour	Signal white RAL 9003

Sound projector, round, 20 W, 100 V

63-1709135-01-01

GM-6040-EV

Cylindrical sound projector with plastic housing

- Integrated thermal fuse
- The high-frequency system ensures good music and speech reproduction

Technical data

Loudspeaker system	2 way, coaxial
Nominal noise power 100 V	20 / 10 / 5 Watt
Frequency range (-10 dB)	120–15'700 Hz
Sensitivity (1 W / 1 m)	91,2 dB
Maximum SPL (20 W / 1 m)	104,3 dB
Coverage angle (-6 dB) (0,5 / 1 / 2 / 4 kHz)	360° / 200° / 105° / 60° Horizontal 360° / 200° / 105° / 60° Vertical
Dimensions (Ø × T)	176 × 252 mm
Material	Plastic ABS 765A
Mounting	Mounting brackets
Protection	IP55
Weight	2,4 kg
Colour	Signal white RAL 9003

5. Clocks

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5. Clocks

PA, VA and VACIE systems can be combined with clock functions in many applications. For schools, public institutions or industrial companies, precise timing circuits that can be triggered by the master clock are attractive. For example, optical and acoustic signal devices can be controlled via additional signal/switching circuits to trigger pause or working time signals. Lighting, air-conditioning, ventilation, heating and alarm systems can also be controlled simply and user-friendly via potential-free contacts. In addition, analog and digital slave clocks can be controlled.

5.1 Master clocks

The heart of every clock system is the master clock. It functions as a timer. All analogue and/or digital slave clocks connected to the master clock are controlled with a uniform time.

Master clock with 4 circuits

Accessories: Receiver (ext. mounting) for synchronization via DCF or GPS signal
- Automatic summer/winter time changeover
- Automatic time corrections (atomic clock corrections)

GM-HU-3000/GM-HU-3000-2
Master clock APS-HU-3000, installed in 19" rack
- Control of analog and/or digital slave clocks (Time code, Minute pulse)
- Synchronization slave clocks GM-HU-3000: 24 V Time code, +24 V Minute pulse
- Synchronization slave clocks GM-HU-3000-2: AFNOR, Time code, +24 V Minute pulse
- Control of electrical consumers, e.g: chime system, light, doors, activation of pause chime, ...
- Up to 6 different timetables for schools or working hours per year programmable
- Integrated lithium battery for storing programmed data (for 10 years in case of power failure)
- Storage of programs on SD card

Options:
- LAN for connection to a network
- Software QW3 Control for operating and programming the master clock with a PC – ONLY with LAN connection possible
- Synchronization with DCF-77 receiver
- Synchronization with GPS receiver

Master clock with 8 circuits

Accessories: Receiver (ext. mounting) for synchronization via DCF or GPS signal
- Automatic summer/winter time changeover
- Automatic time corrections (atomic clock corrections)

APS-57.1
Master clock with 8 time-controlled I²C circuits
- 8 time-controlled I²C circuits. Can be used as binary contacts in the APS®-APROSYS system
- Switching times can be programmed with a PC and stored on the SD card
- Slave clocks up to 1 A can be controlled with TC or pulse method
- Programmable remote control available

Accessories

GM-122984-40 External radio receiver for master clock, DCF		63-1809560-01-01
GM-122985 Converter GPS-DCF for master clock		63-1808957-01-01

5.2 Analogue slave clocks Indoor

Several analogue clocks can be controlled as slave clocks by a master clock. All connected slave clocks are operated centrally and thus display a uniform time.

If the master clock has a radio receiver, all connected slave clocks display the radio-controlled time. If the master clock has additional power reserve batteries, the connected analogue clocks will continue to run for a limited time without interruption in the event of a power failure. The summer and winter time are changed automatically.

Analogue slave clocks Indoor

Analogue slave clock, round, Indoor

Ø/Reading distance: Ø 230 mm = 10 m | Ø 300 mm = 20 m | Ø 400 mm = 25 m

- Clockwork: 24 V Minute pulse, Time code (TC), LAN (230 V or PoE)

General:
- Diameter 230, 300 or 400 mm
- Housing in ABS plastic, white (NCS 0502-B)
- Dial: line, DIN line, fine line, numbers
- Flat front glass

Options:
- Aluminium casing
- All RAL- or NCS colours as special production
- Built-in version 300 mm/400 mm available
- Console for double-sided mounting
- Ball guard grille

5.3 Analogue slave clocks Outdoor

Analogue slave clocks, round, Outdoor

Analogue slave clocks, round, Outdoor

Ø / Reading distance: Ø 400 mm = 35 m | Ø 600 mm = 65 m | Ø 900 mm = 100 m

- Clockwork: 24 V Minute puls, Time code (TC), LAN (230 V or PoE)
- Single-sided wall mounting or double-sided mounting with console

General:
- Diameter 400, 600 oder 900 mm
- Housingg made of aluminiumm in color RAL 7037 (dusty grey)
- Dial: lines, numbers

Options:
- Front glass made of polycarbonate
- Ball guard grille
- All RAL- or NCS colours as special production
- With lighting

5.4 Digital slave clocks Indoor

STYLE serie, Digital slave clocks, Indoor

STYLE serie

Because of its excellent readability, the STYLE series is used in education, finance, health, transport and industry

- Display of time, date, temperature, number of days, calendar week
- 12- or 24-hour display
- LED colours: red, yellow, green, blue or white
- Digit height: 5, 7 or 10 cm with fixed or alternating display
- Synchronization types: AFNOR, PULSE, DCF, DHF, NTP, WIFI
- Eco mode (programmable energy saving function)
- 4 brightness levels

General:
- Housing in ABS plastic, black
- With wall mounting bracket
- Flat front profile (8 mm), matt glass
- Summer / winter time changeover pre-programmed

Options:
- Flush-mount models
- Waterproof models
- Wall or ceiling bracket for double-sided mounting
- Remote control for countdown function

LUMEX serie, Digital slave clocks, Indoor

LUMEX serie

Robust, reasonably priced watches with extensive functionality. For a wide range of applications in different areas

- Display of time, date, temperature
- 12- or 24-hour display
- LED colours: red, yellow, green
- Height of digits: 5, 7 or 12 cm with fixed or alternating display
- Synchronization types: Time code, PULSE, DCF, NTP, Wireless
- Eco mode (programmable energy saving function)
- Different brightness levels

General:
- Robust metal housing, matt glass
- Summer/winter time changeover pre-programmed

Options:
- Flush-mount models
- Wall or ceiling bracket for double-sided mounting
- Temperature sensor
- Remote control for countdown function

5.5 Digital slave clocks Outdoor

LUMEX serie, Digital slave clocks, Outdoor

LUMEX serie

Robust watches for outdoor use such as swimming pools, schools or industry. Due to the double-row arrangement of the LED, the display can be easily read over a distance of 75 to 200 m. The LED is mounted in two rows

- Display of time, date, temperature
- 12- or 24-hour display
- LED colours: red, yellow
- Eight of digits: 15, 19, 25, 30 or 45 cm with fixed or alternating display
- Synchronization types: Time code, PULSE, DCF, NTP
- Eco mode (programmable energy saving function)
- Different brightness levels

General:
- Robust metal housing, matt glass
- Summer/winter time changeover pre-programmed

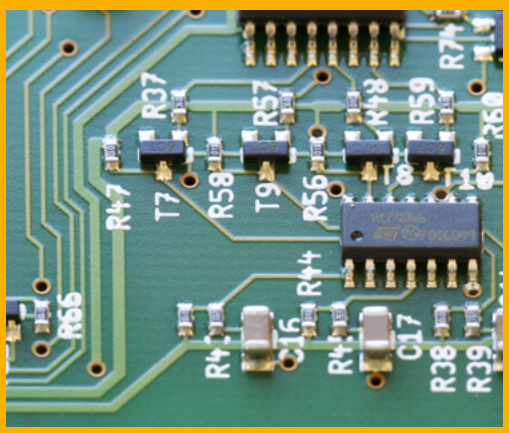
Options:
- Double-sided mounting
- Temperature sensor
- Remote control for countdown function

Productive

Everything that bears the brand name of g+m elektronik ag is «Swiss Made». This means that all products are developed on our premises and manufactured in-house with quality components from regional suppliers.

Our state-of-the-art SMD production, aimed at lot sizes, and testing centres with differing technologies guarantee a constantly high product quality.

Our processes are certified to ISO 9001, ISO 14001, ISO 45001 and are subject to the internal, strict quality assurance system. This allows us to further-develop the product design at any time. As required by the needs of the market. This means that we are always one step ahead.



Acoustics | Clocks | Evacuation

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