

Public Address & Voice Alarm System



EN 54-16

EN 54-4

1488-CPR-05500/W



SHIELD[®]
TRUSTED WORLDWIDE



Introduction

Competence and innovation driven by consistent market development and customer requirements have shaped the successful development of the SHIELD Brand. The extensive product range of the market leader in the field of fire detection technology contains single, individually integrable system performances. In this way, a customized overall fire protection concept can be planned and realized for every need with optimally synchronized products.

Performance is in international demand, SHIELD is among the highly accredited fire alarm companies that meet rigorous British and American standards for all projects from small conventional system to multi site networks. Certifications such as UL and FM approvals have earned SHIELD a world-renowned reputation with quality products and powerful solutions.

A strong brand is generally known to be a secure basis for close and lasting customer relationships. In accordance with this, SHIELD uses available potential in order to keep on growing in a dynamic competitive environment. And at the same time, SHIELD stands for innovative and high quality fire alarm and evacuation systems.

We invite you to explore and visit our new website www.shieldglobal.com. You can also send us your feedback and inquiry through our user-friendly online forms.

Certificates Overview



CERTIFICATE



This is to certify that



Shield Fire, Safety and Security Limited
Redburn House
2A Tonbridge Road
Romford
Essex RM3 8QE
United Kingdom

has implemented and maintains a **Quality Management System**.

Scope:
Manufacture, Assembly & Testing of Grooved and Threaded Pipe Fittings, and Valves for Fresh Water/Sea Water and Fire Fighting Equipment. The Testing and Assembly of ERW & Seamless Pipes.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no.	20005627 QM15
Date of original certification	2014-09-09
Date of certification	2016-10-25
Valid until	2019-10-24

DQS Inc.



Garish Rao
Managing Director

Accredited Body: DQS Inc., 1130 West Lake Cook Road, Suite 340, Buffalo Grove, IL 60089 USA
Administrative Office: Deubach Quality Systems (India) Pvt. Ltd., 5th Floor, Anjaneya Techno Park, 147, HAL Airport Road, Kodihalli, Bangalore - 560 017 - India



NOTIFIED BODY No. 1488
INSTYTUT TECHNIKI BUDOWLANEJ
CERTIFICATION DEPARTMENT
ul. FILTROWA 1, 00-611 WARSZAWA
ph.: +48 (22) 57 96 167, +48 (22) 57 96 168, fax: +48 (22) 57 96 295
e-mail: certyfikacja@itb.pl, www.itb.pl



CERTIFICATE OF CONSTANCY OF PERFORMANCE

1488-CPR-0556/W

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

**Voice alarm control and indicating equipment
type NANOVES**

general identification, intended use, essential characteristics and parameters are described in Annex No. Z-1488-CPR-0556/W which is an integral part of this certificate

placed on the market under the name or trade mark of:

Shield Fire, Safety and Security Limited
Redburn House 2A, Tonbridge Road
RM38QE Romford
United Kingdom

and produced in the manufacturing plant:

**ul. Galaktyczna 37
80-299 Gdańsk**

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard

EN 54-16:2008

under system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the constancy of performance of the construction product.

This certificate was first issued on 23.05.2016 as a certificate No 1488-CPR-0556/W and will remain valid as long as (neither the harmonised standard), the construction product, the AVCP methods, nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

HEAD
of the Certification Department

K. Katarzyna
Katarzyna Katarzyna, M.Sc. Eng.



MANAGING DIRECTOR
of Instytut Techniki Budowlanej

Marcin M. Kruk
Marcin M. Kruk, PhD

Warsaw, 23.05.2016

NANOVES System



JEDNOSTKA NOTYFIKOWANA / NOTIFIED BODY 1438
Centrum Naukowo-Badawcze Ochrony Przeciwpowarowej
Im. Józefa Tułuszkowskiego
Państwowy Instytut Badawczy
ul. Nadwiślańska 213, 05-420 Józefów
Polska / Poland



CERTYFIKAT STAŁOŚCI WŁAŚCIWOŚCI UŻYTKOWYCH CERTIFICATE OF CONSTANCY OF PERFORMANCE

1438-CPR-0479

Zgodnie z Rozporządzeniem Parlamentu Europejskiego i Rady (UE) 305/2011 z dnia 9 marca 2011 r. (Rozporządzenie CPR), niniejszy certyfikat odnosi się do wyrobu budowlanego:

Głośnik do dźwiękowych systemów ostrzegawczych typu SP-S206, SP-S206C
«Opis wyrobu, zamierzone zastosowanie, właściwości użytkowe patrz kolejne strony certyfikatu»
wprowadzanego do obrotu pod nazwą handlową lub znakiem firmowym producenta:

Shield Fire, Safety and Security LTD
Redburn House, 2A Tonbridge Road
Romford, RM3 8QE, United Kingdom

i wytwarzanego w zakładzie produkcyjnym

Niniejszy certyfikat potwierdza, że wszystkie postanowienia dotyczące oceny i weryfikacji stałości właściwości użytkowych określone w załączniku ZA normy:

**EN 54-24:2008 Fire detection and fire alarm systems
Part 24: Components of voice alarm systems – Loudspeakers**

w ramach systemu 1 w odniesieniu do właściwości użytkowych określonych w niniejszym certyfikacie są stosowane oraz że:

zapewniono warunki utrzymania stałości właściwości użytkowych.

the performance of the construction product is assessed to remain constant.

Niniejszy certyfikat został wydany po raz pierwszy w dniu 04.08.2016 i pozostaje ważny, zgodnie z umową nr 51/DC/CPR/2016, do dnia 03.08.2026 dopóki nie zmienią się normy zharmonizowane, sam wyrob budowlany, metody OWN SHU i warunki jego wytwarzania nie ulegną istotnej zmianie oraz pod warunkiem, że nie zostanie zawieszony, cofnięty lub nie nastąpi zakończenie certyfikacji przez notyfikowaną jednostkę certyfikującą wyrob.

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product:

Loudspeaker for voice alarm systems type SP-S206, SP-S206C
«Product description, intended use, performances see the following pages of the certificate»
placed on the market under the name or trade mark of:

Shield Fire, Safety and Security LTD
Redburn House, 2A Tonbridge Road
Romford, RM3 8QE, United Kingdom

and produced in the manufacturing plant

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard

**EN 54-24:2008 Fire detection and fire alarm systems
Part 24: Components of voice alarm systems – Loudspeakers**

under system 1 in relation to the performance set out in this certificate are applied and that:

the performance of the construction product is assessed to remain constant.

This certificate was first issued on 04.08.2016 and will remain valid, in accordance with the agreement no 51/DC/CPR/2016, until 03.08.2026 as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended, withdrawn or terminated by the notified product certification body.

Nr wydania certyfikatu: 1
Certificate issue no:
Data wydania: 04.08.2016
Issue date:



DYREKTOR CNBOP-PIB
DIRECTOR OF CNBOP-PIB

brg. dr inż. Dariusz Wróblewski

DC/CPR-13/28.07.2016 Strona / Page 1 / 3



JEDNOSTKA NOTYFIKOWANA / NOTIFIED BODY 1438
Centrum Naukowo-Badawcze Ochrony Przeciwpowarowej
Im. Józefa Tułuszkowskiego
Państwowy Instytut Badawczy
ul. Nadwiślańska 213, 05-420 Józefów
Polska / Poland



CERTYFIKAT STAŁOŚCI WŁAŚCIWOŚCI UŻYTKOWYCH CERTIFICATE OF CONSTANCY OF PERFORMANCE

1438-CPR-0480

Zgodnie z Rozporządzeniem Parlamentu Europejskiego i Rady (UE) 305/2011 z dnia 9 marca 2011 r. (Rozporządzenie CPR), niniejszy certyfikat odnosi się do wyrobu budowlanego:

Głośnik do dźwiękowych systemów ostrzegawczych typu SP-W6
«Opis wyrobu, zamierzone zastosowanie, właściwości użytkowe patrz kolejne strony certyfikatu»
wprowadzanego do obrotu pod nazwą handlową lub znakiem firmowym producenta:

Shield Fire, Safety and Security LTD
Redburn House, 2A Tonbridge Road
Romford, RM3 8QE, United Kingdom

i wytwarzanego w zakładzie produkcyjnym

Niniejszy certyfikat potwierdza, że wszystkie postanowienia dotyczące oceny i weryfikacji stałości właściwości użytkowych określone w załączniku ZA normy:

**EN 54-24:2008 Fire detection and fire alarm systems
Part 24: Components of voice alarm systems – Loudspeakers**

w ramach systemu 1 w odniesieniu do właściwości użytkowych określonych w niniejszym certyfikacie są stosowane oraz że:

zapewniono warunki utrzymania stałości właściwości użytkowych.

the performance of the construction product is assessed to remain constant.

Niniejszy certyfikat został wydany po raz pierwszy w dniu 04.08.2016 i pozostaje ważny, zgodnie z umową nr 51/DC/CPR/2016, do dnia 03.08.2026 dopóki nie zmienią się normy zharmonizowane, sam wyrob budowlany, metody OWN SHU i warunki jego wytwarzania nie ulegną istotnej zmianie oraz pod warunkiem, że nie zostanie zawieszony, cofnięty lub nie nastąpi zakończenie certyfikacji przez notyfikowaną jednostkę certyfikującą wyrob.

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product:

Loudspeaker for voice alarm systems type SP-W6
«Product description, intended use, performances see the following pages of the certificate»
placed on the market under the name or trade mark of:

Shield Fire, Safety and Security LTD
Redburn House, 2A Tonbridge Road
Romford, RM3 8QE, United Kingdom

and produced in the manufacturing plant

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard

**EN 54-24:2008 Fire detection and fire alarm systems
Part 24: Components of voice alarm systems – Loudspeakers**

under system 1 in relation to the performance set out in this certificate are applied and that:

the performance of the construction product is assessed to remain constant.

This certificate was first issued on 04.08.2016 and will remain valid, in accordance with the agreement no 51/DC/CPR/2016, until 03.08.2026 as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended, withdrawn or terminated by the notified product certification body.

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DYREKTOR CNBOP-PIB
DIRECTOR OF CNBOP-PIB

brg. dr inż. Dariusz Wróblewski

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Ceiling Speaker

Wall Speaker

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Control Unit & Modules

- ✓ Flexible and scalable configuration.
- ✓ Fully digital audio transmission.
- ✓ Redundant communication between control units and fireman microphones.
- ✓ Modular construction of control units.
- ✓ Fully integrated with Fire Alarm Systems.
- ✓ Remote management via Ethernet and WAN connection.
- ✓ Intercom function between all fireman and zone microphones.
- ✓ A unique system of dynamic allocation of spare amplifiers.
- ✓ Advance DSP functions.

NANOVES

FLEXIBLE STRUCTURE

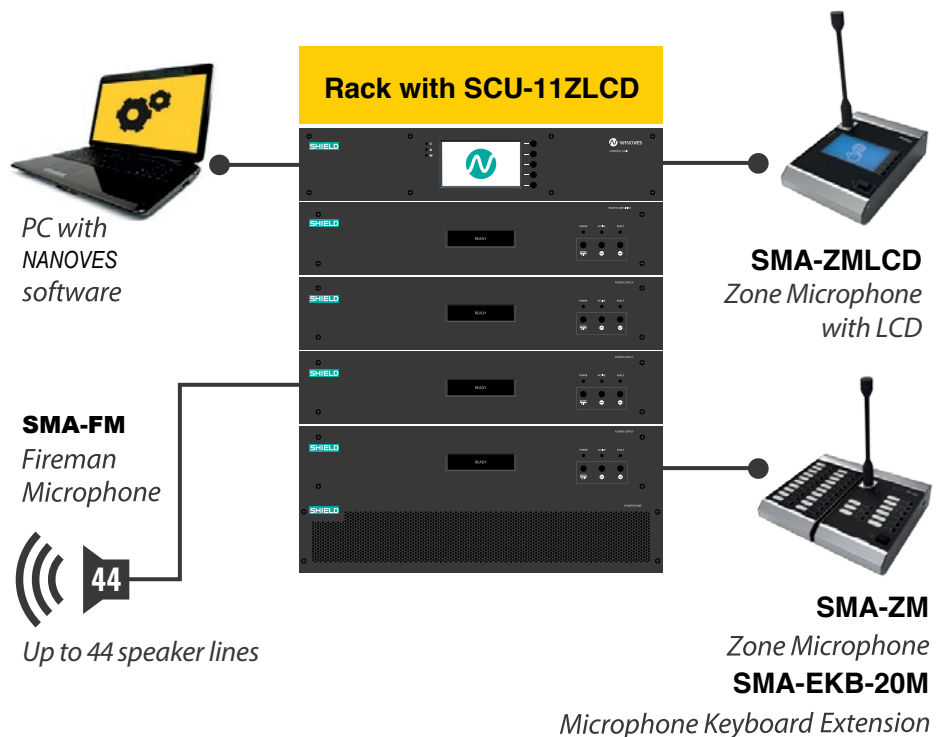
NANOVES system is designed with a view to a possibility of its versatile application it is extremely suitable for both decentralized and centralized systems. The architecture of this system is based on fibre optic Ethernet connections between control units and other elements of the system which allows for its application in structures most extensive in terms of area and functionality such as air terminals, oil fields and refineries, commercial centers and office complexes.

At the same time while offering control units tailored to our Clients' needs and requirements in respect of design, development and making as well as multi-channel and multi-net amplifiers, we are able to create compact systems for individual small and medium sized structures as well as for more complex projects connected by a digital network.

NANOVES is based on the fiber optic technology of digital transmission of voice messages, inclusive of alarm messages, commercial messages and music. The primary task of the system is to cooperate with fire alarm systems and automatic broadcasting of fire hazard messages in the buildings.

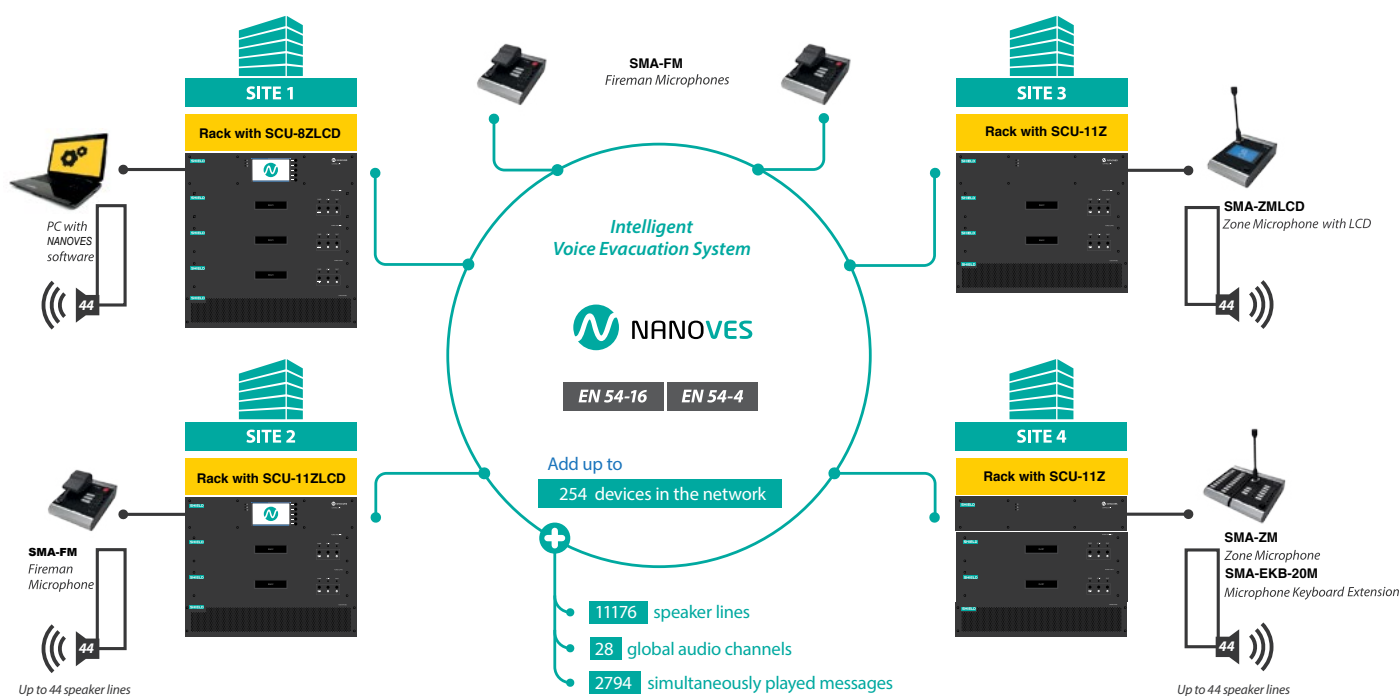
The functionality of the system is designed in accordance with EN-54-16, a mandatory standard which has been applicable in Europe and the equivalents of which have also been implemented in many other parts of the world, inclusive of the Middle East.

NANOVES system comprises control devices, multi-channel amplifiers as well as fireman microphone consoles and zone microphones. The system enables digital scaling communication not only among all the elements of the system but other integrated safety systems as well.



Main Parameters of the NANOVES System:

- Compliance with EN 54-16, EN 60849.
- 28 global audio channels.
- Max 254 units in the network.
- Up to 32 GB SD flash memory dedicated for playback and recording messages (48 kHz, 16 bit).
- Maximum number of simultaneously played messages limited to the number of 4CTRLN and 2CTRLN cards in the system.
- Intercom function between all microphones.
- External audio inputs in every control units and zone microphones.
- Up to 12 secured amplifiers supported.
- 4 common 100 V audio buses in every Control Unit for spare amplifiers and budget solutions with maximum 4 at the same time played messages.
- DSP with implemented 3 band parametric EQ on all inputs on control units, 8 band parametric EQ, delay lines, audio limiter and feedback eliminator on each of the audio outputs.
- Complex control inputs / outputs and RS485 interfaces for Fire Alarm Systems and BMS integration.
- 8 x 80, 8 x 160 and 2 x 650 W bridgeable Class D amplifiers.



Elements of Integrated NANOVES System

NANOVES CONTROL UNITS

SCU-8ZLCD	Control unit with 8 control slots, 4 Audio - DSP extension (function) slots and touch screen GUI
SCU-11Z	Control unit with 11 control slots
SCU-11ZLCD	Control unit with 11 control slots and touch screen GUI
SMA-FM	Desktop fireman microphone station
SMA-ZM-LCD	Desktop zone microphone with touch screen
SMA-ZM	Desktop zone microphone station
SMA-EKB-20M	Extension keyboard 20 keys
SMA-ISLE	Interface communication module and audio signal splitter with RS485 for external systems

NANOVES INTERCHANGEABLE MODULES

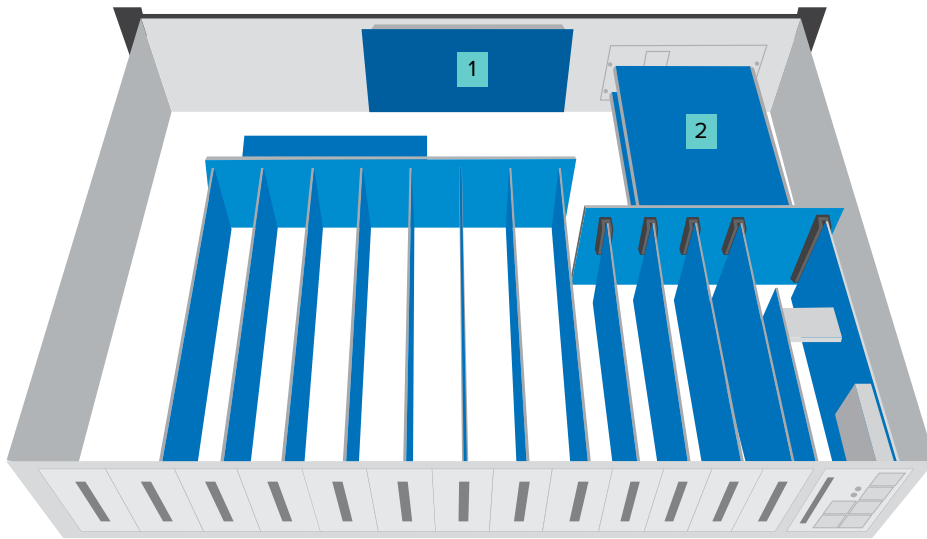
SCUE-CPU	CPU Card
SCUE-NET-1Gb/WAN/RS	Communication card
SCUE-8FLOGIN	Logical Input card for function slot
SCUE-8CLOGIN	Logical Input card for control slot
SCUE-8FLOGOUT	Logical output card for function slot
SCUE-8CLOGOUT	Logical output card for control slot
SCUE-4/8AIO	Audio card 4 IN / 8 OUT AUDIO / RS485
SCUE-8AIN	Audio card 8 IN AUDIO
SCUE-2CTRLN	2 Loudspeaker line control card
SCUE-4CTRLN	4 Loudspeaker line control card

Control Units

EN 54-16

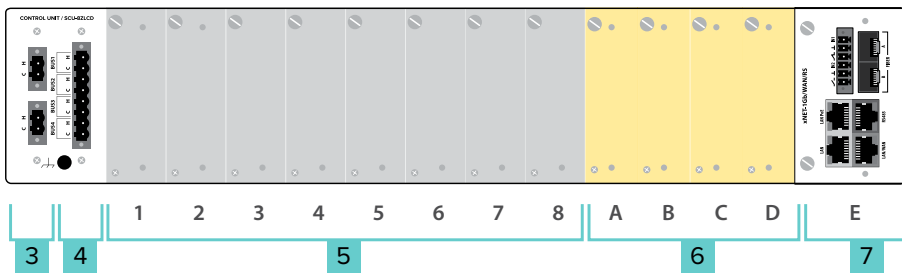
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1488-CPR-0556/W



COMPONENTS CONTROL UNIT:

1. GUI Card for SCU-8ZLCD.
2. SCUE-CPU card.
3. Power Supply.
4. 100 V audio global BUS.
5. 1 – 8 slots for loudspeaker line control cards and logical output and input cards.
6. A – D slots for logical and audio output and input cards.
7. E slot for communication card with SFP modules and copper RJ45 connectors.



The main feature of the architecture of NANOVES is versatility, exchangeability of the devices which control its operation of this system such as SCU-8ZLCD, SCU-11Z, SCU-11ZLCD three types of Control Units that function in a redundant communication ring. Each CU is equipped with unique features so configured as to execute Public Address & Voice Evacuation functions in any point of the system and in any type of the buildings optimally in terms of costs and equipment required. These Control Units may both perform the major function of system control and be a minor element of a local character. What is more, functions performed by central units which control the functioning of the system can be taken over by fireman microphone panels. This is

an extremely flexible and scaled structure aimed at functional and cost optimization of construction of every project, including of the most complex ones.

A Control Unit is the main element of the system which receives an audio signal from sources and broadcasts it to the whole system. A Control Unit is a central unit managing all the remaining elements of the system and enabling flexible configuration of routes for audio signals from any source of signal to any outlet. Global switching of audio routes occurs on the basis of a programmable logic system as well as Ethernet 1G network (UDP / IP, TCP / IP).

A Control Unit is controlled by SCUE-CPU processor card which task is to reproduce audio communications from a SD card and make them available locally and globally. This card exercises system functions (realization of scenarios) as well as control functions (verification of configuration cohesion). Each CPU card allows for simultaneous reproduction of eight messages.

Elements of the system operate with resolution of 48 kHz / 16 bit / 2 channels. Long distance communication between the devices is made by gigabit TCP/IP transmission over fiber. Thanks to double the number of fiber and cat5 ports the redundancy of connection is assured.

EN 54-16

[illegible]

SCU-8Z is a matrix mixer of the input signals which routes such signals to four 100 V internal audio buses, a 28-channel digital system buses or directly to audio outputs in a unit.

- EN 54-16 certified system.
- Fully network-based system allowing for configuration, control and diagnostics via Ethernet.
- A possibility of managing up to 254 devices in the network.
- 8 slots available for any configuration of loudspeaker control cards, control inputs and outputs cards.
- Additional 4 slots dedicated only for audio input/output cards and control input/output cards.
- Built in 2 control inputs and outputs.
- Up to 12 secured amplifiers supported.
- 8 messages played simultaneously into different zones.
- 2x1Gb4 ports available for system extension.
- 1x POE port.
- Up to 32 GB SD flash memory dedicated for playback and recording messages (48 kHz, 16 bit).
- DSP implemented on each SCUE-4/8AIO card with 3 band parametric EQ on 4 inputs, 8 band parametric EQ, delay lines, audio limiter and feedback eliminator on each of the audio outputs.
- SMS protocol allows NANOVES system integration with other producers devices.

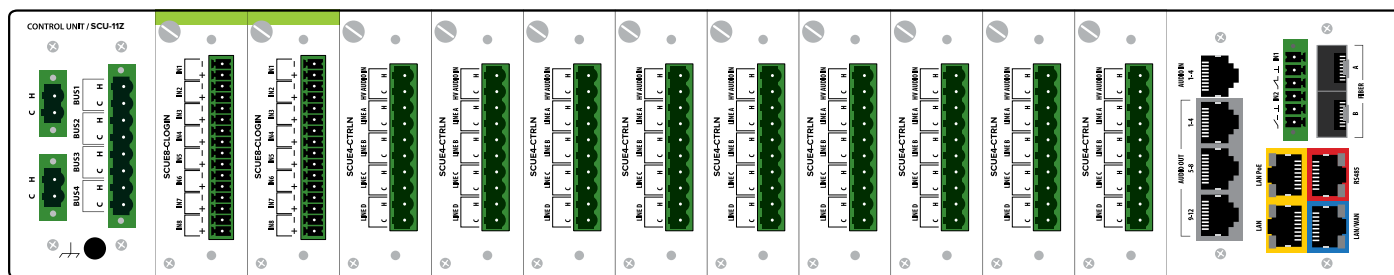
SCU-11Z / SCU-11ZLCD Control Units

EN 54-16


Front panel



Back panel



SCU-11Z control unit is a matrix mixer of the input signals which routes signals to four 100 V internal audio buses, a 28-channel digital system buses or directly to audio outputs in a unit.

SCU-11Z is designed to work for minor PA & VE systems or as an extension unit in more complex systems. It means that CU can function independently as the central unit of a minor system or be an element of a large complex system for which it represents another level of either territorial extension (operation in a remote structure) or functional extension (operation of further fire zones and loudspeaker lines in such a structure). The flexibility of this CU allows for optimization of both equipment and costs of operation in both minor and major structures as well as scattered groups of buildings.

While working in the network system and when losing connection with a superior unit SCU-11Z is able to carry out fire fighting scenarios independently thanks to the locally recorded configuration. If attached to the main communication ring of the system SCU-11Z can not only control amplifiers

and power supply managers but receive alarm and digital signals and send them to other devices in the system as well.

SCU-11Z control unit distributes audio signals to individual zones and supervises the correctness of functioning of individual zones. It also controls the condition of a loudspeaker line and amplifiers. It detects and signals defects and inserts a backup amplifier. This CU is equipped with an

ABT-cAudio-4/12 card offering 4 audio inputs and 12 audio outputs intended for connection of amplifier inputs. SCU-11Z can be equipped also with an LCD colour and touch display that gives a direct access to the managerial function and monitoring of the whole system in this way we obtain additional configuration called SCU-11ZLCD.

SPECIFICATIONS

- **EN 54-16 certified system.**
- **Fully network-based system allowing for configuration, control and diagnostics via Ethernet.**
- **A possibility of managing up to 254 devices in the network.**
- **11 slots available for any configuration of loudspeaker control cards, control inputs and outputs cards.**
- **Built in audio card with 4 inputs and 12 audio outputs.**
- **12 messages played simultaneously into different zones.**
- **Up to 32 GB SD flash memory dedicated for playback and recording messages (48 kHz, 16 bit).**
- **Up to 12 secured amplifiers supported.**
- **Built in 2 control inputs and outputs.**
- **1x POE port.**
- **2x 1Gbit ports available for system extension.**
- **Integrated DSP with implemented 3 band parametric EQ on all inputs on control units, 8 band parametric EQ, delay lines, audio limiter and feedback eliminator on each of the audio outputs.**
- **Comprehensive solution based on RS485 allowing for integration NANOVES system with devices offered by other producers thanks to implementation of standard and proprietary communication interfaces.**



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EN 54-4



Power Amplifiers

- ✓ Designed in accordance with EN 54-16 standards applicable to Voice Evacuation Systems.
- ✓ Can be used in every Public Address System.
- ✓ Destined for NANOVES system.

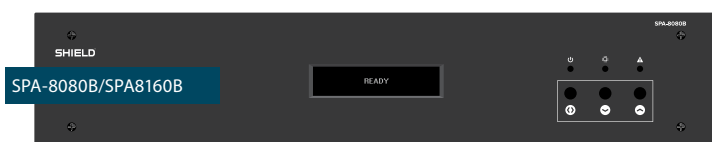
SPA-8080B/8160B/2650B Power Amplifiers

EN 54-16

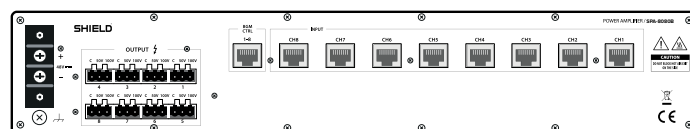
EN 54-4



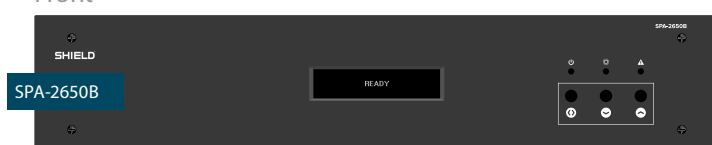
Front



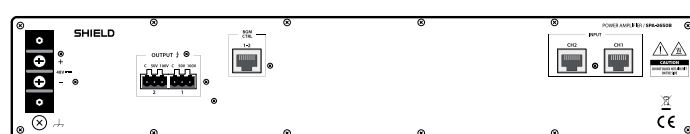
Back



Front



Back



The Amplifiers are designed for perfect integration into the Nanoves solutions. Thanks to their flexibility, they can also be used for any other Public Address and Voice Evacuation applications. These amplifiers have been developed to meet the specific requirements of the EN 54-16 standard for safety installations.

The SPA-XXXXB is a family of 2U, rack mountable, 8-channel (SPA-8080B, SPA-4160B) and 2-channel (high power SPA-2650B) class-D transformer isolated power amplifiers for 50 V and 100 V distributed loudspeaker systems. Amplifier SPA-8080B can deliver up to 8x 80W, for SPA-8160B and SPA-2650B delivering power increases respectively to the 8x 160 W and 2x 650 W. In a bridged mode amplifier channels are combined and can deliver 4x 160 W for SPA-8080B, 4x320 W for SPA-8160B and

1x 1300 W for SPA-2650B.

These amplifiers have 48 VDC input which allows to connect with battery backup system for maximum availability and durability in a voice evacuation system.

The SPA-XXXXB amplifiers are powered from external power supply module SPS-48800 working in a block. The current from block is distributed to individual amplifiers through the "power manager" SPS-M48 (device includes a battery charger and is in compliance with EN 54-4).

SPECIFICATIONS

- **Front panel indicators include:**
 - ◆ Supply.
 - ◆ Active.
 - ◆ Fault.
- **100 / 50 Volt available via terminal blocks at the rear.**
- **Output channels can be linked into:**
 - ◆ **SPA-8080B, SPA-8160B:**
4 x 160 W or 4 x 320 W by daisy-chaining.
50 V tapping (input on parallel).
 - ◆ **SPA-2650B:**
1 x 1300 W by daisy-chaining.
50 V tapping (input on parallel).
- **SPA-XXXXB series combines with the SPS-M48 Power Supply Manager (charger and back-up supply).**

ORDERING INFORMATION

Model	Description
SPA-8080B	Power Amplifier D-Class 8x80 Watt
SPA-8160B	Power Amplifier D-Class 8x160 Watt
SPA-2650B	Power Amplifier D-Class 2x650 Watt

SPECIFICATIONS

Model	SPA-8080B	SPA-8160B	SPA-2650B
Power Supply			
Nominal DC Input Voltage	48 V		
DC input voltage range	42 – 57 V		
Idle current DC channels in standby	570 mA	570 mA	330 mA
DC fuse rating (internal)	6x 7.5 AF-H	4x 15 AF-H 2x 7.5 AF-H	2x 15 AF-H 2x 7.5 AF-H
Overall power efficiency nominal DC input max output power at 1 kHz	80%		
Power Consumption			
Sleep	0.2 A	0.2 A	0.15 A
Active	0.7 A	0.7 A	0.33 A
Max. nominal current	20 A	38 A	38 A
Amplifier			
Continuous nominal output power per channel, all channels driven into nominal load at 1 kHz 30°C ambient	80 W 125 Ω / 100 nF	160 W 62 Ω / 200 nF	650 W 15.4 Ω / 200 nF
Continuous nominal output power per channel, all channels driven into nominal load at 1 kHz 55°C ambient	TBA	TBA	TBA
Nominal balanced input level for 100 V output at 1 kHz and nominal load	1 V		
Balanced input level trim range for 100 V output at 1 kHz and nominal load	0.95 – 3 V		
Max balanced input level	3 V		
Input impedance at 1 kHz	22 kΩ		
Input common mode rejection at <1 kHz	> 61 dB		
Frequency response (-6 dB)	75 Hz – 20 kHz 125 Ω / 100 nF	75 Hz – 20 kHz 62 Ω / 200 nF	75 Hz – 22 kHz 15.4 Ω / 200 nF
S/N ref nominal power at 1 kHz 22 Hz – 22 kHz	> 85 dB 125 Ω / 100 nF	> 85 dB 62 Ω / 200 nF	> 85 dB 15.4 Ω / 200 nF
THD power 1 kHz (42 V – 57 V)	< 10%		
Crosstalk between channel 50 Hz – 20 kHz nominal load dB	< -70 dB 125 Ω / 100 nF	< -70 dB 62 Ω / 200 nF	< -70 dB 15.4 Ω / 200 nF
Connectivity			
DC input socket	DG58C-A-2P13		
Audio output socket	3 pin PHOENIX 5.08 mm		
Nominal output voltage taps V	50 / 100		
Mechanical			
Front panel width	482 mm		
Back panel width	445 mm		
Height	88.5 mm		
Net Weight	15 kg	18.6 kg	15 kg
Gross weight (including packaging)	16.2 kg	19.8 kg	16.2 kg
Packaging dimensions	150 x 530 x 610 mm		



EN 54-4

EN 12101-10



Power Supply Equipment

- ✓ Designed in accordance with:
 - ◆ EN 54-4 standard applicable to Voice Evacuation System.
 - ◆ EN 12101-10 standard applicable to Smoke and Heat Control System.
- ✓ SPS-M48 – destined for NANOVES system.
- ✓ SPS-M24 and SPS-M48 – can be used in every 24 V or 48 V PAVA and other systems.

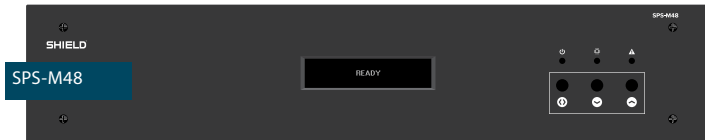
SPS-M48/SPS-48800/SPS-F4 Power Supply Equipment

EN 54-4

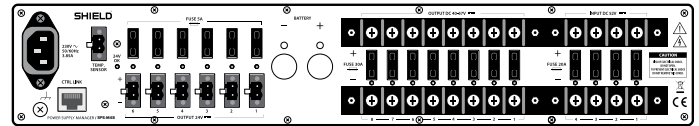
EN 12101-10



Power Supply Manager / Front



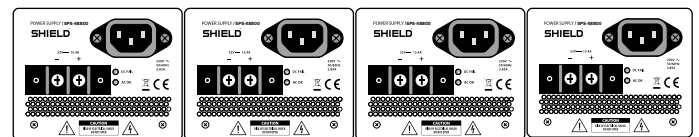
Power Supply Manager / Back



Power Frame / Front



Power Supply Units / Back



SPS-M48 Power Supply Manager is designed for distribution of DC Power Supply from Power Supply Units (PSU) and a back-up battery. The unit controls battery charging and distributes power supply to all Voice Evacuation System (VES) equipment at max 60 A. When the system uses battery back-up, the power supplied is 3.2 kW (48 V) and 1.6 kW (24 V). The unit complies with the EN 54-4 VES standards and also EN 12101-10 Smoke and Heat Control System standards.

As a main source of energy distribution, the manager uses external modules 800 W (SPS-48800) for 48 V. PSM48 power supply manager

uses internal power converter for 24 V equipment. As a source of stand-by power supply it uses the battery bank of the capacity of up to 200 Ah.

SPS-M48 cooperates with the 4x12 V VRLA battery bank. It maintains the bank in charged condition, ensures temperature compensation of charging parameters and monitors serial resistance of the battery and its wiring as specified in Exhibit No. A2 to the EN 54-4 Standard.

SPS-M48 co-operates with up to 4 modules of SPS-48800 Power Supply Units. The manager ensures safe

connection for the purpose of parallel operations and monitors the output parameters of each power supply unit.

SPS-48800 is designed for assembling in a dedicated SPS-F4 Power Supply Unit Frame. The elements of the system are designed for assembling in a Rack 19" IP30-type.

SPECIFICATIONS

Model	SPS-M48
Electrical	
Maximum configuration	1x SPS-M48/PSM24: Power Supply Manager SPS-48800/PS2450: Power Supply Unit 1x SPS-F4 - Power Supply Units Frame
AC power supply	230 VAC + 10%-15%; 50/60 Hz
Max nominal power consumption	885 W / 3.85 A
Efficiency at rated power	> 90%
DC input	4 ; bolted terminals; dedicated power supply unit (SPS-48800)
DC input protection	4 x 20 A 80 Volt DC
DC outputs	8x 48 V, each output max. 30 A 6x 24 V, each output max. 5 A (total for all outs 6.25 A)
Summary maximum DC output load (24 V and 52 V)	3200 W
Battery (type)	4 pieces, VRLA 12 V 15-200 Ah max. 8 mΩ
Charging current	max. 14 A
Charging voltage	54.6 V ± 0.6 V (at 25°C)
Maximum resistance of wiring and fuses	10 mΩ
Maximum total serial resistance of wiring, fuses, and batteries	28 – 100 mΩ
Operating temperature	-5°C up +40°C
Dimensions	482 (W) x 85 (H) x 443 (D)
Weight	7.2 kg
Model	SPS-48800
Electrical	
AC power supply	230 VAC +10% -15%, 50/60Hz, 3.85 A
Maximum power consumption	885 W / 3.85 A
Efficiency at rated power	> 90%
AC input protection	T6.3 A/250 V 5x20mm slow-blow fuse (accessed when the casing is open)
Protection from electric shock	Class I (EN 60065)
DC output	52 VDC; max. 15.4 A
Dimensions	85 (W) x 95 (H) x 395 (D)
Weight	2.6 kg

ORDERING INFORMATION

Model	Description
SPA-M48	Power Supply Manager
SPA-48800	Power Supply Unit
SPS-F4	Power Supply Units Frame

Microphones



SMA-FM
Fireman Microphone

A NANOVES fireman microphone is a monitored external device cooperating with control units in a redundant communication ring. It can thereby perform a superior function of a system control unit, too. A fireman microphone is used to induce alarm announcements as well as general announcements, to choose individual zones and to broadcast live voice announcements. It is equipped with programmable function buttons with the help of which functions chosen may be arbitrarily assigned. Up to five SMA-EKB-20M extensions with additional function buttons may be attached to a fireman microphone.

A CPU switch enables immediate and direct broadcasting of announcements to all zones without any involvement of the control system (even during a failure of the central processor). The microphone is able to automatically detect a button failure and an audio path to the microphone capsule

SPECIFICATIONS

- **Monitored microphone and connection of the microphone module to the system.**
- **Dedicated evacuation button.**
- **Three fully programmable buttons and a possibility of connecting up to five 20-button extensions.**
- **Built-in 2 contact inputs and 2 relay outputs.**
- **POE or external feeder based power supply.**
- **Black-box function—recording all announcements played back during an alarm.**
- **Built-in SFP modules and CAT5e for simplicity of implementation of the loop topology.**
- **RS 485 for communication with external systems.**
- **Intercom function between all fireman and zone microphones.**



SMA-ZM-LCD
Zone Microphone with LCD

(inclusive). A fireman microphone is also equipped with an intercom function and is able to communicate with each other microphone in the system. This microphone performs the same role as an SMA-ZM zone microphone. In order to facilitate its operation and to make it more intuitive the microphone is additionally equipped with an LCD touch screen.

SPECIFICATIONS

- **4.5" LCD touch screen for fast and clear matricing and system management.**
- **Monitored connection of the unit to the system.**
- **Five fully programmable buttons with a possibility of extension up to five 20-button modules.**
- **Four non-symmetrical audio inputs, (1/8") stereo jack connector.**
- **Built-in speaker.**
- **Stereo jack sockets for Headset.**
- **Implemented intercom function.**
- **Power supply via POE.**

SMA-EKM-20M
Microphone Keyboard Extension

Each extension attached to a fireman microphone or a zone microphone offers an additional 20 function buttons.



EN 54-16



SMA-ZM
Zone Microphone

This zone microphone is used to induce general announcements, to choose individual zones and to broadcast live voice messages.

It is connected directly to a selected control unit or via an additional Ethernet switch. A zone microphone is supplied with power locally or from a control unit via POE.

It is equipped with programmable function buttons which may arbitrarily be assigned selected functions. All the parameters needed for operation of a worksite can be programmed: assignment of zones to various buttons, naming of zones and zone groups, priorities, access to various announcements, voice level adjustment, "push to talk" button, music on / music off and music routing. LEDs on the SMA-ZM give also information about existing fault in the system, fault in specific speaker zone, evacuation mode on and type of announcement on the zone (BGM, EVAC, Warning, Fireman microphone).

A zone microphone offers a possibility of connecting up to five SMA-EKB-20M extension with additional function buttons to it.

As a fireman microphone it is also equipped with an intercom function and is able to communicate with each other microphone in the system.

SPECIFICATIONS

- **Monitored connection of the unit to the system.**
- **Nine fully programmable buttons with a possibility of extension up to five 20-button modules.**
- **Four non-symmetrical audio inputs, (1/8") stereo jack connector.**
- **Built-in speaker.**
- **Stereo jack sockets for Headset.**
- **Implemented intercom function.**
- **Power supply via POE.**

Exchangeable Modules

EN 54-4



SCUE-LCD GUI Card



It is a 4.5" TFT LCD touch screen with a control module. It allows to get fast and easy access to interactive system menu's such as: loudspeaker zones control, defect detection, alarm cut off, dynamic routing, log archives, intercom and many others.

SCUE-CP CPU Card



It is a card which integrates SCU-8Z and SCU-8ZLCD control units with other elements of the NANOVES system. CPU controls whole network traffic and manages audio routing, digital matrix (8x8) as well as all DSP functions.

SCUE-CPU enables remote access to the configuration parameters of each elements of the system.

SCUE-8AIN 8 AUDIO Input Card for Function Slot



This audio input extension card is destined for a function slot of SCU-8Z/LCD. It offers 8 symmetrical line audio inputs via an Phoenix-type connector.

SCUE-NET-1GB/WAN/RS Communication Card



SCUE-NET is a communication card consists of two independent 1 GB network switches. Network switch no. 1 is destined solely for transition of data connected with the basic functionality of the NANOVES system, i.e. working of the emergency sound system and AVB operation whereas network switch no. 2 is used for remote connections. This card operates TCP/UDP/PTP/DHCP protocols and assures CPU-OFF based audio data exchange. In addition the card has an RS485 port enabling implementation and integration of the NANOVES system with any other systems, e.g. Fire Alarm System, by means of exchangeable libraries with protocol descriptions. Another functionality is a POE splitter for providing power to, among others, fireman microphones.

SMA-ISLE



The SMA-ISLE is a communication module and audio signal splitter with RS485 for external system in tegration.

- Address settings – Number of addresses in the range of 0-F (16 addresses).
- Local AUDIOIN – 4 input channels on the 8 pin connector. For easier and faster connection of audio sources a Phoenix-type connectors can be used.
- LOCAL AUDIO IN jack (8 pin connector Phoenix) is bridged with LOCAL AUDIO OUT (RJ-45).
- Output amplifiers – RJ-45 connector for the 4-channel amplifier.
- Local AUDIOOUT – RJ-45 connector for input signals to the system.
- PSM – RJ-45 connector for the link with power manager.

SCUE-4/8AIO

4 AUDIO Input / 8 AUDIO Output Card



This audio input/output card is destined for a function slot of SCU-8Z/LCD. It offers 4 line audio inputs via an RJ45 connector as well as 8 symmetrical outputs via an RJ45 connector for leading out audio signals to the external devices or amplifiers of the NANOVES system. The card is also equipped with an RS485 interface with the help of which the NANOVES system can be controlled or integrated with devices offered by other producers.

ABT-cAudioIO-4/12

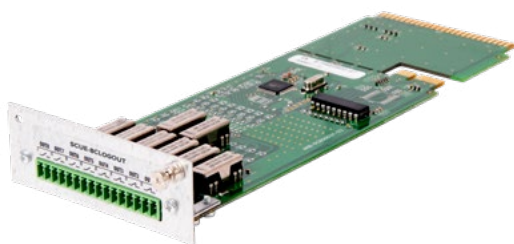
4 AUDIO Input / 12 AUDIO Output Card



This card is destined solely for an SCU-11Z Control Unit. It offers 4 symmetrical line audio inputs (RJ45 connector) and 12 symmetrical outputs to lead out audio signals to the external devices or amplifiers of the NANOVES system.

SCUE-8FLOGOUT / SCUE-8CLOGOUT

LOGICAL OUTPUT CARD FOR FUNCTION/CONTROL SLOT



The logical output card has 8 relays: 4 – normally Closed and 4 – normally Open. Each of them is fully programmable in terms of the way of functioning (NC / NO) as well as functions correlation

SCUE-8FLOGIN / SCUE-8CLOGIN

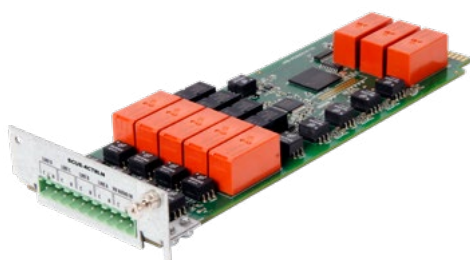
LOGICAL INPUT CARD FOR FUNCTION/CONTROL SLOT



The logical input card a function or control slot has 8 control inputs which may receive signals from other systems in order to trigger a desired reaction of NANOVES system. Inputs of an SCUE-8FLOGIN card offer two modes of work: a non-potential mode (normally shorted /normally opened) and a voltage mode. Moreover, the card monitors shortings and openings of cables connected to inputs.

SCUE-4CTRLN

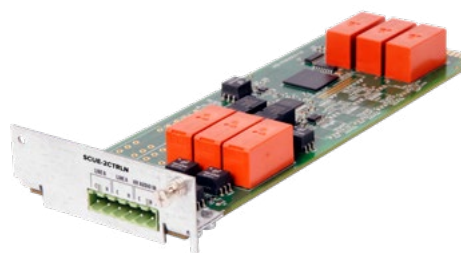
4 LOUDSPEAKER LINE CONTROL CARD



This card is destined for a control slot of every control unit and it offers 4 independent loudspeaker line outlets. Measurement of the lines can be done by 2 methods: the impedance method or LOOP method. The card detects failure of the amplifier and switches the 100 V signal between internal buses and individual amplifier input on the card. Thanks to built-in dedicated measuring component on an SCUE-4CTRLN card monitors the status of the internal rail.

SCUE-2CTRLN

2 LOUDSPEAKER LINE CONTROL CARD



An SCUE-2CTRLN card is destined for a control slot of every control unit and it offers two independent loudspeaker line outlets (A, B). Measurement of the lines can be done by two methods: the impedance method or LOOP method.

The card detects failure of the amplifier and switches the 100 V signal between internal buses and individual amplifier input on the card.



NANOVES-M



NANOVES-C

Compact plug-and-play PA/VA system

EN 54-16

EN 54-4

- ✓ Standalone or TCP/IP network architecture
- ✓ Scalable and quick to install All-in-One type system
- ✓ Wall or rack mounted versions available
- ✓ Impedance, end of line module or short-circuit isolators for speaker line monitoring
- ✓ Ability to connect standalone Nanoves-M and Nanoves-C devices for large distributed systems
- ✓ Ease of networking: using copper, single and multimode fibre in any combination
- ✓ Built-in fire microphone and touch screen with easy-to-use interface to control background music sources, volumes, timers and all voice evacuation related functions

SHIELD
TRUSTED WORLDWIDE

We make everyday life safer

Compact plug-and-play PA/VA system



EN 54-16

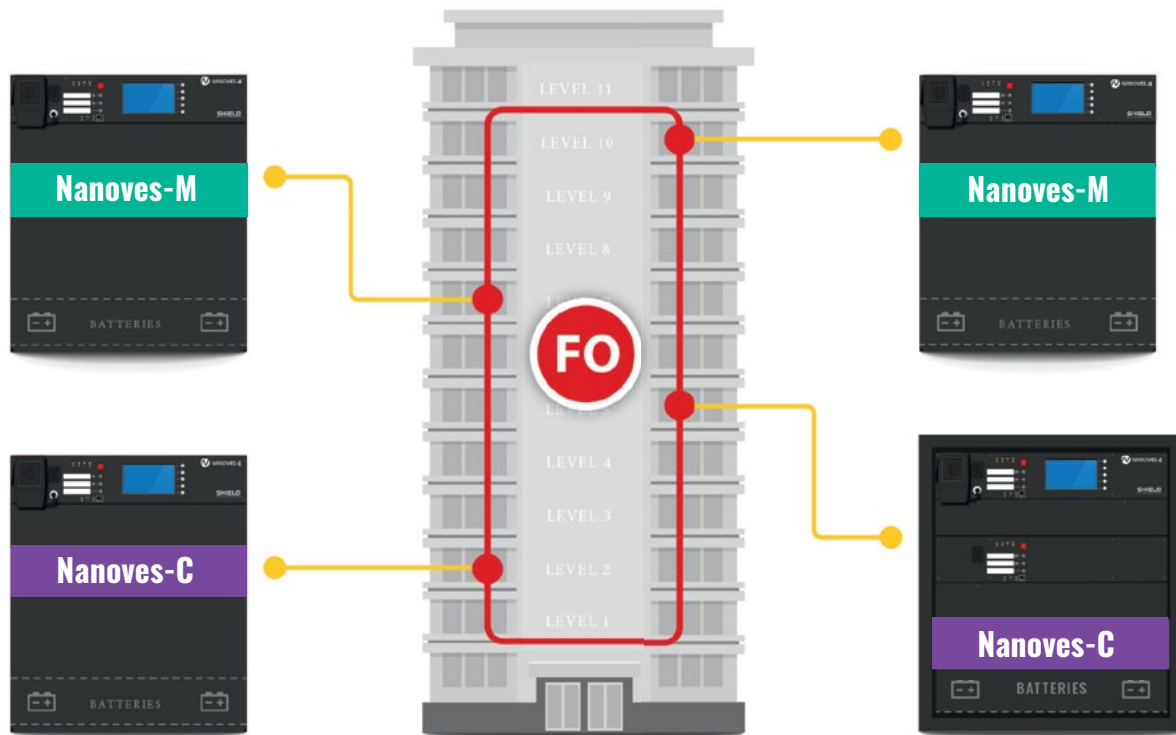
EN 54-4



Nanoves-M / Nanoves-C main features

- » *All in one – independent wall mount EN 54-4/16 PA/VA unit*
- » *Stand alone or TCP/IP network architecture*
- » *DSP audio processing on board*
- » *Compatibility with RACK mounted modular NANOVES*
- » *Professional Sound Quality (48 kHz, 16 bit, uncompressed audio)*
- » *Evacuation, paging message and background music features*
- » *Impedance, end of line module or short-circuit isolators for speaker line monitoring*
- » *Simple installation and simple to design*
- » *User friendly and intuitive programming software*
- » *EN 54-4 charger for up to 65 Ah batteries and 24 / 48 VDC outputs for powering external devices*
- » *VoIP / SIP integration*

Nanoves-M/ Nanoves-C system example



Nanoves-M and Nanoves-C are scalable Public Address & Voice Alarm units suitable for multi-purpose architectures. Devices from Nanoves-M and Nanoves-C series are voice alarm compact control units containing all components within one compact housing, which meet all the requirements of EN 54-16 and EN 54-4 (certificate of constancy of performance 1438-CPR-0527).

Whole concept of the system is based on the high quality audio network distribution nodes equipped either with two independent 160 W, 320 W or three independent transformerless 500 W class D amplifiers, which distribute 100 V signals to 4, 8 or 16 speaker lines depending on the type. The system also ensures operation of a backup amplifier for the Emergency priority type of signals.

All type of centrals are equipped with integrated backup power supply and EN 54-4 compliant charging unit.

Nanoves-M and Nanoves-C are designed to be a Plug & Play device with all elements expected from Voice Evacuation Systems; including a built-in fire microphone, touch-screen for global control, DSP, programmable contact inputs and buttons, time scheduler, charger with battery mounting space and expandable memory size for messages – all fitted into IP30 chassis or dedicated 15u rack for Nanoves-C 8003LNR with 8003R.

Nanoves-M and Nanoves-C belongs to the family of independent EVAC systems which can be networked together and extended by desktop zone microphones or fireman microphones via TCP/IP network to provide

live announcements and background music inputs. The system has been designed to be wired using CAT5 cables for paging microphones and fibre-optic redundant interlink connections between the systems.

All systems support up to 45 high quality audio signals distributed over 254 devices in the network.



Nanoves-M	2001/N/L/LN *	4001/N/L/LN *	4002/N/L/LN *	4002LNR
No of AB zones	2	4	4	4
No of speaker lines	4	8	8	8
No of control inputs	7	7	7	7
No of relay outputs	3	3	3	3
Relay switching current (max.)	3 A peak **			
Relay switching voltage (max.)	50 V AC / DC peak **			
Relay switching power (max.)	90 W **			
Total audio load of the system	320 W rms	640 W rms	640 W rms	640 W rms
No of amplifiers / power	2 / 160 W	2 / 320 W	2 / 320 W	2 / 320 W
Redundant amplifier	Yes	Yes	Yes	Yes
No of messages played at the same time	1	1	2	2
Protection	Over-temperature, short circuit, overload, ground leakage			
Battery working time	30 hours + 30 minutes evacuation			
Ingress protection	IP 30			
Operating condition	-5 to + 45°C / 5% to 95% humidity with no condensation			
Gross weight	26 kg	31 kg	31,5 kg	19 kg
Dimensions (W×H×D)	440 mm × 525 mm × 350 mm			439 mm × 176 mm × 354 mm
Finish	Black			
Optional functions				
No of audio inputs	1 – Stereo to mono			
No of audio outputs	1 – mono line output			
Network card	2× SFP module 1 Gb/s; 1× POE 1 Gb/s, 100 Mb/s; 1× LAN 1 Gb/s, 100 Mb/s connection; RS485 port; 1x LAN/WAN 100 Mb/s connection			
Basic network card	2× LAN 1 Gb/s, 100 Mb/s, 1× LAN/WAN 100 Mb/s connection			–
GUI	4,3" color touch screen			
DSP	Input EQ, outputs EQ, feedback eliminator and audio limiter, delay up to 30000 ms – routing, mixing, prioritizing included			

* All devices available with optional touch screen LCD (L) and network card with 2 × SFP modules and POE (N)

** IMPORTANT: any DC combination of V & A not to exceed switching power max. value. Not allowed capacitive nor inductive load, because of large inrush current / voltage spike, that can significantly exceed the maximum allowed switching current or voltage.



Nanoves-C	8003LN	8003LNR	8003R	8003LNR + 8003R
No of AB zones	8			16
No of speaker lines	16			32
No of control inputs	7 + 2		7	14 + 2
No of relay outputs	3 + 2		3	6 + 2
Relay switching current (max.)	3 A peak *			
Relay switching voltage (max.)	50 V AC / DC peak *			
Relay switching power (max.)	90 W *			
Total audio load of the system	1500 W rms			3000 W rms
No of amplifiers / power	3 / 500 W			6 / 500 W
Redundant amplifier	Yes			Yes
No of messages played at the same time	3			6
Protection	Over-temperature, short circuit, overload, ground leakage			
Battery working time	30 hours + 30 minutes evacuation / 4 × 12 V VRLA batteries			
Ingress protection	IP30	Mounted in IP30 Rack		
Operating condition	-5 to + 45°C / 5% to 95% humidity with no condensation			
Weight	23 kg	16,5 kg	16 kg	N / A
Dimensions (W×H×D)	440 × 525 × 350 mm	440 × 176 × 354 mm		600 × 765 × 600 mm
Finish	Black			
Optional functions				
No of audio inputs	1 – stereo to mono			2 – stereo to mono
Power sources – EN 54-4	1 × 24 V DC (150 mA maximum) and 1 × 48 V DC (350 mA maximum)			2 × 24 VDC (150 mA max.) & 2 × 48 VDC (350 mA max.)
Optional network card	2 × SFP module 1 Gb/s; 1 × POE 1 Gb/s, 100 Mb/s; 1 × LAN 1 Gb/s, 100 Mb/s connection; RS485 port; 1 × WAN 100 Mb/s connection		2 × LAN 1 Gb/s, 100 Mb/s, 1 × WAN 100 Mb/s connection	2 × SFP module 1 Gb/s; 1 × POE 1 Gb/s, 100 Mb/s; 3 × LAN 1 Gb/s, 100 Mb/s connection; RS485 port; 2 × WAN 100 Mb/s connection
GUI 4,3" color touch screen	Yes	Yes	No	Yes
DSP	Input EQ, outputs EQ, feedback eliminator and audio limiter, delay up to 30000 ms – routing, mixing, prioritizing included			
Fire microphone	Yes	Yes	No	Yes

* IMPORTANT: any DC combination of V & A not to exceed switching power max. value. Not allowed capacitive nor inductive load, because of large inrush current / voltage spike, that can significantly exceed the maximum allowed switching current or voltage.

Microphones

EN 54-16

SMA-M01 Microphone

The SMA-M01 microphone is an affordable fully analog device. It is equipped with a built in gong generated onboard the device, accessible through the switch on the back panel. The gong as well as the microphone itself has an individual volume control knob also placed on the back panel of the device.

To operate the device press the MIC ON button, the status LED will switch to steady green light. In the event of an active built in gong, the status LED will turn green once the gong has ended. When finished transmitting the message release the MIC ON button to deactivate the gooseneck mic.



SMA-M04 Microphone

The SMA-M04 is a 4 button analog microphone with built in gong, push to talk and bi-color LED indicating the ready-to-speak status.

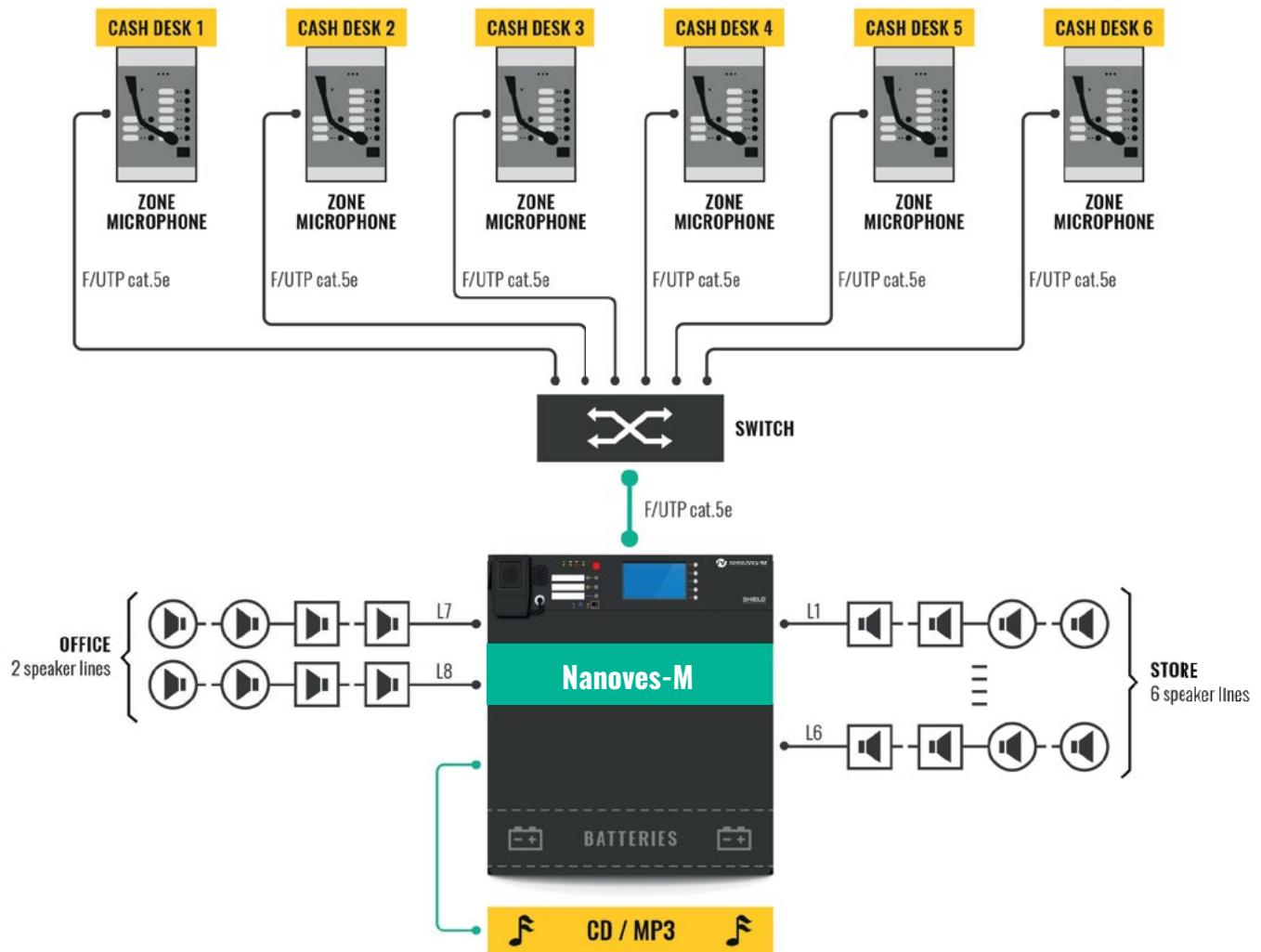
To operate the device first select the Zones by pressing designated buttons and then press MIC ON button, the status LED will switch from red (not ready for broadcast) to steady green light. In the event of an active built in gong, the status LED will turn green once the gong has ended. When finished transmitting the message release the MIC ON button to deactivate the gooseneck mic.



	SMA-M01	SMA-M04
Operating voltage	20–57 VDC	
Efficiency	10 mV/a	
Output level	775 mV	
Maximum distance from amplifier	250 m	
Recommended cable type	UTP	
Connector Type	8P8C (RJ45)	
Dimensions without packaging (not more than)	150 × 60 × 165 mm	
Net weight (not more than)	1,2 kg	

Examples of Implementations

STORE / PA system



PA SYSTEM WITHIN THE STORE

» Zone microphone at the till:

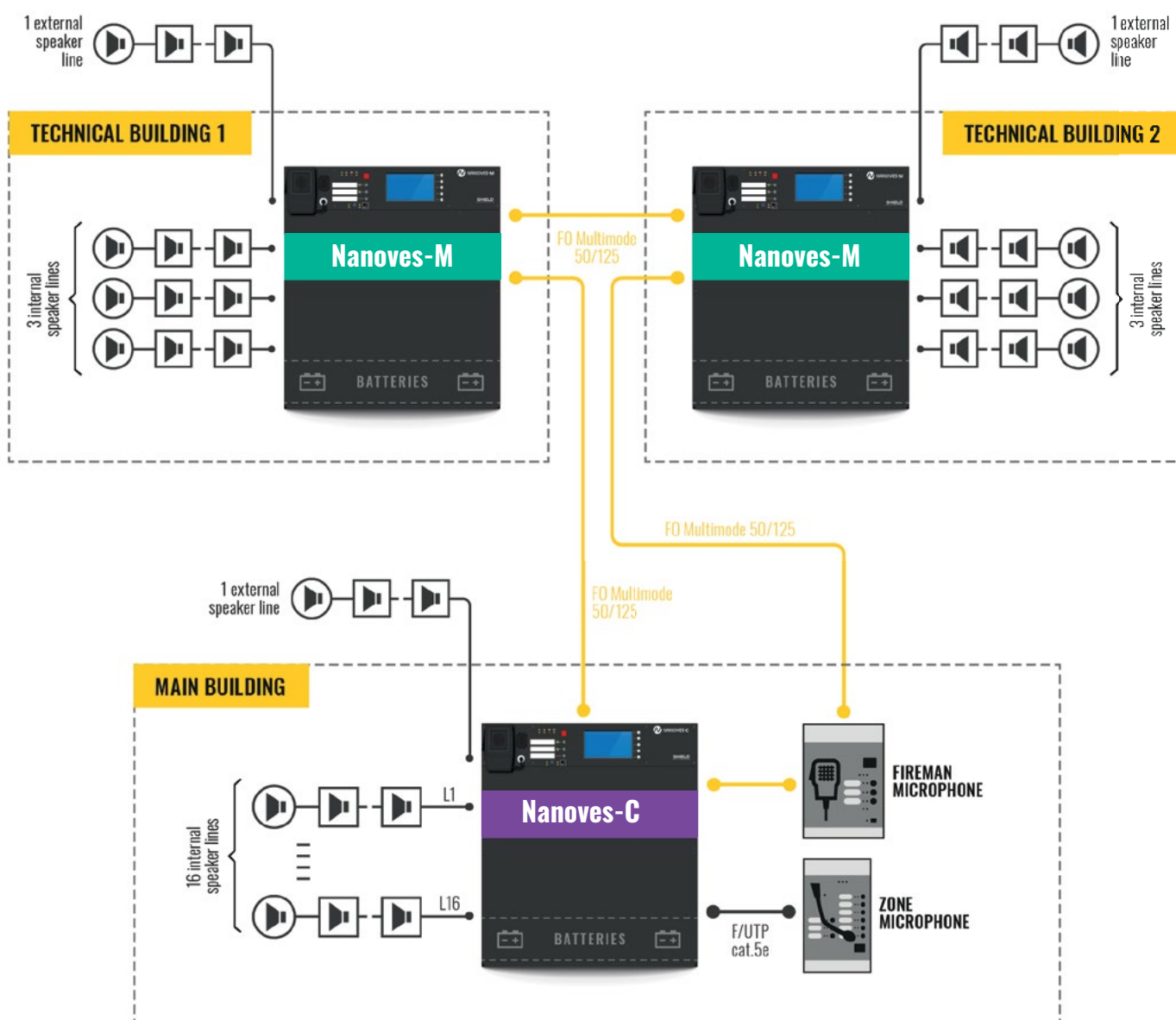
- › Public announcements;
- › Fully programmable buttons can be easily activated to broadcast specific announcements e.g. previously recorded public information regarding opening of tills or staff announcements.

» Zone microphone in the office:

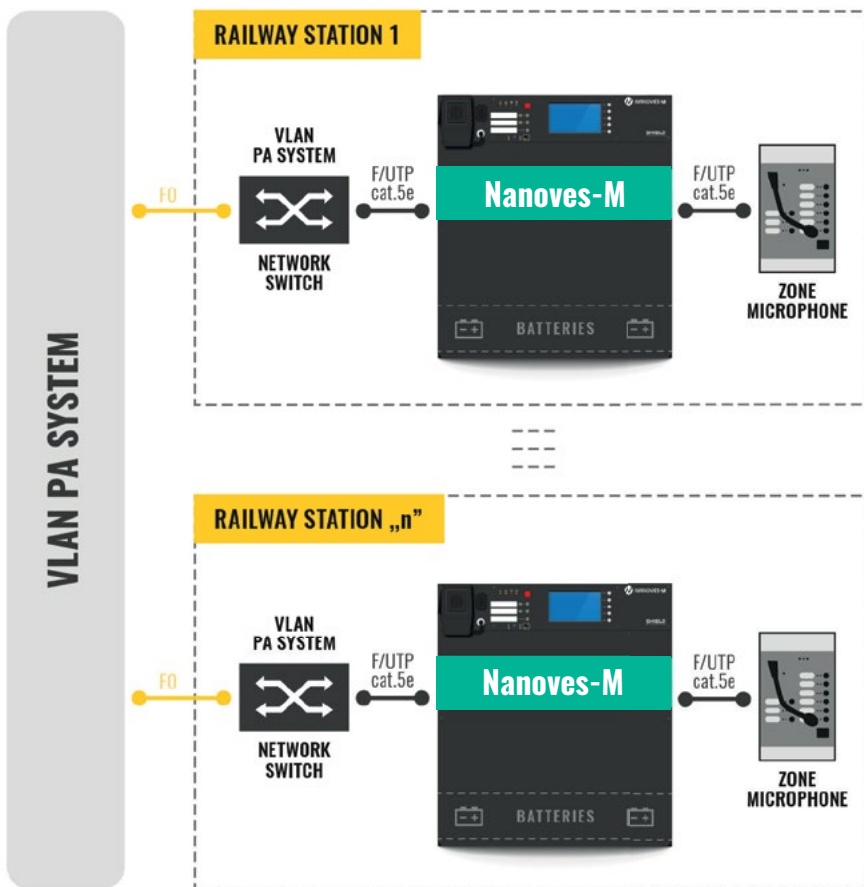
- › It acts as the PA control panel allowing to select zones, switch on/off specific sound sources and regulate the sound volume;
- › Ethernet protocols enable seamless communication between zone/fireman microphones and the control units via standard switches connecting mic cables to Nanoves-M control unit;
- › In-built audio setup can be used to connect external sound sources to broadcast marketing announcements or to provide background music in the venue.

INDUSTRIAL FACILITY – networked Voice Evacuation System

- » Nanoves-M and Nanoves-C control unit's network cards allow to join several industrial buildings into one integrated system.
- » Use of fibre-optic loops between Nanoves-M and Nanoves-C central units guarantees that in the event of a single fault/damage, the system will continue to function properly.
- » Microphones located in the main building enable broadcasting of live announcements and/or pre-recorded automatic messages to selected zones in all buildings.
- » Fireman microphone can perform all key functions of a Nanoves-M and Nanoves-C control unit e.g. activate alarm messages or public announcements in selected or all zones and to broadcast live voice messages.
- » Once the fire warning is triggered (automatically via the fire alarm system or manually using fireman microphones), the system starts broadcasting alarm messages recorded on each control unit. Loss of connectivity in one part of the networked system (including damage to messaging memory of one control unit) does not impact on the system's ability to broadcast warning messages – the devices work independently thus ensuring continuous alarm warning functions.
- » Loudspeakers lines in open spaces are connected to central units via certified power surge protectors thus ensuring safety of devices during electric storms or lightning.



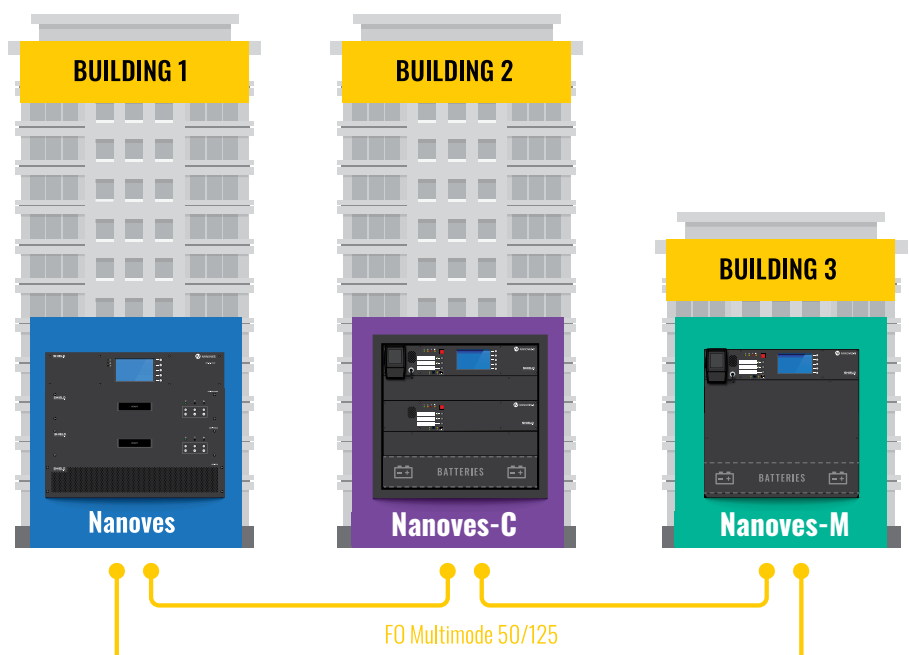
TRAIN / TUBE / BUS STATIONS – using Voice Evacuation System



- » Nanoves-M control unit's network cards allow to join several stations into one integrated system via Ethernet and VLAN protocols.
- » Zone microphones located at each station enable broadcasting of live announcements and/or pre-recorded automatic messages to selected zone(s) at the station as well as to all zones in the whole system. Information can be broadcasted by staff to all or selected platforms to advise passengers of changes in the timetable or to warn them of an emergency.
- » In-built audio inputs in each central unit and microphones allow to connect external sound sources and to transmit information controlled by the external authority.
- » In-built buffering function enables recording of lower priority information to be transmitted once the priority zones are freed up.

Expansion of existing Nanoves-M system – connection with NANOVES

- » Connecting Nanoves-M and Nanoves-C system to NANOVES system, designed to work with medium and large structures, can provide full networking capabilities. A networked solution of NANOVES, Nanoves-C and Nanoves-M can be then installed at large train stations, airports and other complex structures while providing tangible cost efficiencies.





EN 54-24



Loudspeakers

- ✓ Ceiling-Mounted Loudspeakers.
- ✓ Wall-Mounted Loudspeakers.
- ✓ Sound Projectors.
- ✓ Horn-Type Loudspeakers.
- ✓ High Power Loudspeaker.
- ✓ Line Array Loudspeakers.
- ✓ Highly Directional Tunnel Loudspeaker.

SP-S206/SP-S2710 Ceiling-Mounted Loudspeakers

- ✓ Full compliance with EN 54-24 Standards.
- ✓ Certificate of Conformity issued by CNBOP: 1438-CPR-0479
- ✓ High efficiency.
- ✓ High acoustic pressure level.
- ✓ Exceptionally reliable full band music reproduction.
- ✓ The highest level of speech understanding.
- ✓ Transformer allowing precise selection of loudspeaker output power.
- ✓ 100% protection of line from breaks and short-circuits at the temperature of 822°C.

EN 54-24


Ceiling mounted fire alarm SP-S2710 and SP-S206 loudspeakers are designed for operations at high acoustic levels and the highest reduction in power supply. Actual wide band high efficiency ensures the best understanding of verbal messages. Their parameters have been carefully selected to comply with false ceiling applications, both at standard and considerably elevated ceiling-to-floor distance.

Thanks to the most advanced technologies. These series loudspeakers combine excellent acoustic parameters and high aesthetics with resistance to mechanical damages and varying weather conditions. They are distinguished by easy and quick installation.

Quality standards and audio characteristics have been confirmed through multiple tests and trials employing such facilities as e.g. echoproof chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing.

The need to maintain the best acoustic parameters, even with easily installed fire-protecting screens, was the idea underlying the design process. These series loudspeakers ensure a balanced sound which is extremely important in emission of highly understandable speech and reliable music reproduction.

These loudspeakers are noticeable thanks to its elegant looks. The loudspeaker part which becomes visible after the installation is protected by means of electroplating and covered by a common and aesthetic white paint coat (RAL 9003) – optionally available other colours (RAL palette).

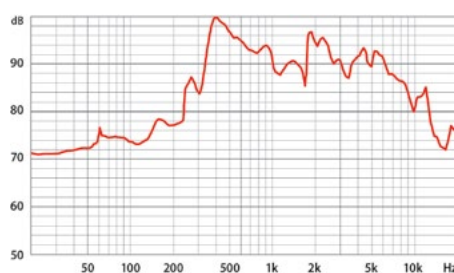
These speakers are equipped with a standardized fire dome made of soft steel and supplied with two cable penetrations with rubber glands. Special jig for sling assembling facilitates quick installation. The delivery comprises the 1-metre long sling. Two ceramic blocks and fireproof wiring coupled with temperature limit fuse are located under the screen. This solution ensures 100% protection of the sound-transmitting line from any break or

short-circuits which may be produced as a result of loudspeaker burn.

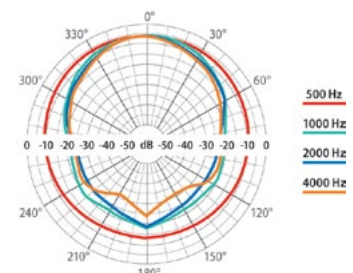
These loudspeakers have been successfully tested by means of the most rigorous trials at the temperature of 822°C. The individual power rating is selected by means of connection with applicable transformer branch.

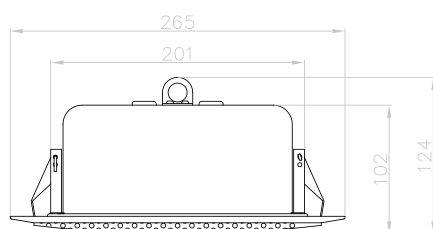
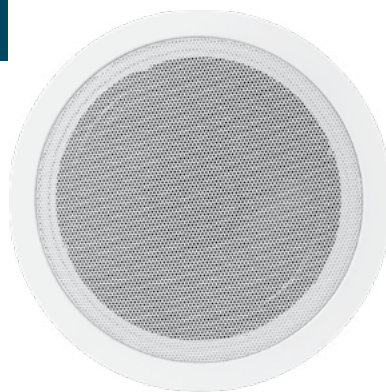
These loudspeakers are equipped with fire dome and thermal protections entirely comply with EN 54-24 Standards. In order to ensure 100% consistency with the highest quality standards we test our loudspeakers following the most meticulous procedures that warrant high parameters of sound emission, safety, and reliability.

Frequency band:



Circular chart of directional characteristic:



SP-S206**SP-S2710****SPECIFICATIONS**

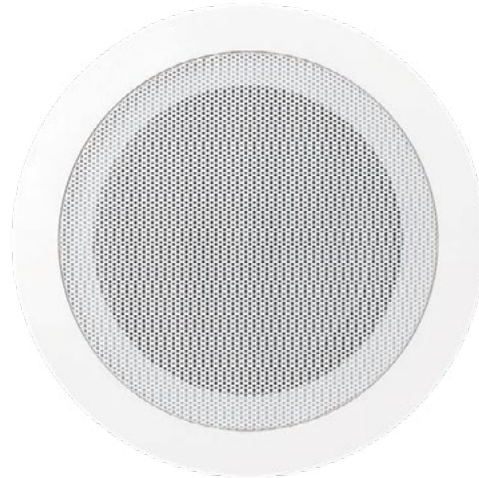
Model	SP-S206	SP-S2710
Electrical		
Rated power, W	6	10
Tappings 100 V line, W	6/ 3/ 1.5/ 0.75	10/ 5/ 2.5/ 1.25
Transformer impedance, Ω 100 V	1667/ 3333/ 6666/ 13333	1000/ 2000/ 4000/ 8000
Driver impedance, Ω	8	8
Effective frequency range, Hz	82– 20000	100– 20000
Sensitivity @ 4 m, 1 W, dB	79	78
SPL @ 4 m, Rated power, dB	87	93
SPL @ 1 m, 1 W, dB, Test signal bandwidth 300 Hz – 6 kHz	91	95
SPL @ 1 m, Rated power, dB, Test signal bandwidth 300 Hz – 6 kHz	99	105
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 160 / 85	180 / 98 / 80 / 69
Environmental		
Environmental type / IP Rating according to EN 54-24	A / IP21C	A / IP21C
IP Rating	32	32
Min / Max Amb Temp	-10°C / 55°C	-10°C / 55°C
Mechanical		
Dimensions, mm	Height 130, $\varnothing$ 204	Height 120, $\varnothing$ 267
Net Weight, kg	1.5	1.8
Colour	White (RAL 9003)	
Material	Steel	
Mounting	Spring clamp	
Cut-out, mm	$\varnothing$ 170	$\varnothing$ 227
Option		
For DC line monitoring	Capacitor	
Back panel width	445 mm	
Colour optional	RAL Palette	
CNBOP Approved	✓	X

ORDERING INFORMATION

Model	Description
SP-S206	6W Ceiling-mounted Loudspeaker
SP-S2710	10W Ceiling-mounted Loudspeaker

SP-S186 Ceiling-Mounted Loudspeakers

- ✓ Full compliance with EN 54-24 Standard
- ✓ Certificate of Conformity: 1438-CPR-0648
- ✓ Compliance with BS5839-8 standard
(Thermal protection).

EN 54-24

Ceiling mounted fire alarm SP-S186 loudspeaker is designed for operations at high acoustic levels. Actual wide band high efficiency ensures the best understanding of verbal messages. Its parameters have been carefully selected to comply with suspended ceiling applications.

Thanks to the most advanced technologies SP-S186 loudspeaker combines excellent acoustic parameters and high aesthetics. It is distinguished by easy and quick installation.

Quality standards and audio characteristics have been confirmed through tests and trials in an anechoic chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing.

The SP-S186 loud speaker ensure a balanced sound which is extremely important in emission of highly understandable speech.

SP-S186 is equipped with a standardized fire dome made of ABS and supplied with two cable penetrations with rubber glands.

The individual power rating is selected by means of connection with applicable transformer branch.

SP-S186 loudspeaker equipped with fire dome, ceramic block and thermal protections entirely comply with EN 54-24 Standard. In order to ensure 100% consistency with the highest quality standards we test our loudspeakers following the most meticulous procedures that warrant high parameters of sound emission, safety, and reliability.

In spite of the fact our loudspeaker is designed for the highest reliability under fire conditions, their acoustic parameters and attractive low prices make them successful in any and all public address systems.

CHARACTERISTICS

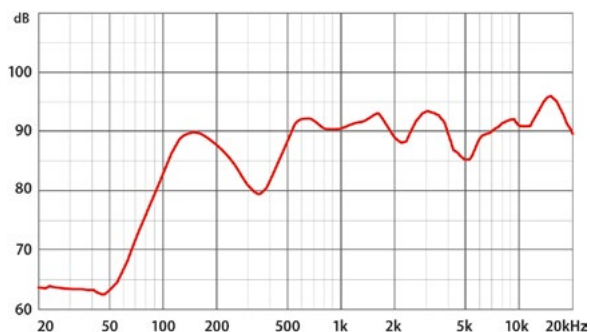
- » The highest level of speech intelligibility
- » Elegant looks
- » 6 W transformer allowing a precise selection of loud speaker output power
- » 100% protection of line from breaks and short-circuits



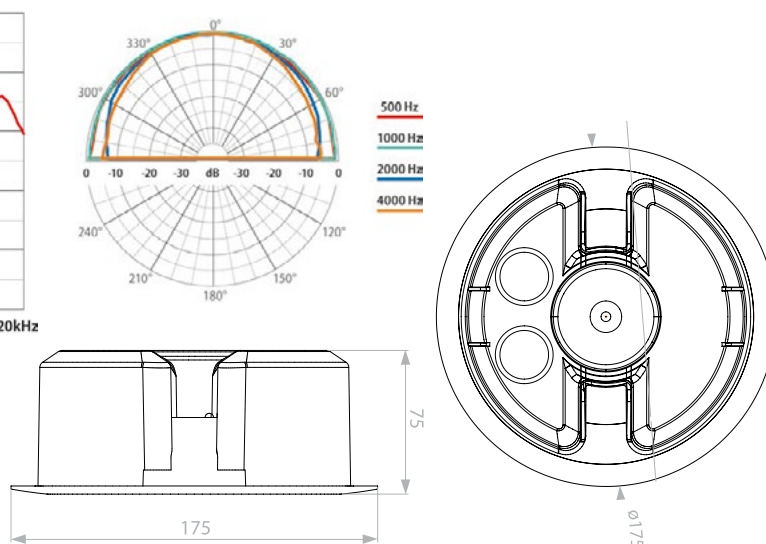
SPECIFICATIONS

Model	SP-S186
Electrical	
Rated power, W	6
Tappings 100 V line according to EN 54-24, W	6 / 3 / 1,5 / 0,75
Tappings 70 V line, W	3 / 1,5 / 0,75 / 0,37
Transformer impedance, Ω	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8
Effective frequency range, Hz	120 – 20 000
Sensitivity @ 4 m, 1 W, dB	79
SPL @ 4 m, rated power, dB	86
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	91
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	99
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 150 / 90
Environmental	
Environmental type / IP rating according to EN 54-24	A / IP21C
IP rating	32C
Min. / max. ambient temperature	-10°C / 55°C
Mechanical	
Dimensions, mm	Height 75, $\varnothing$ 175
Net weight, kg	0,66
Colour	White (RAL 9003)
Material	ABS
Mounting	Spring clamp
Cut-out, mm	$\varnothing$ 150
Option	
For DC line monitoring	Capacitor (SP-S186C)

Frequency band:



Circular chart of directional characteristic:



SP-S106/SP-S136 Ceiling-Mounted Loudspeakers

- ✓ **Full compliance with EN 54-24 Standard**
- ✓ **Certificate of Conformity: 1438-CPR-0635**
- ✓ **Compliance with BS5839-8 standard**
(Thermal protection).

EN 54-24


Ceiling-mounted fire alarm loudspeakers SP-S106 and SP-S136 are designed for applications which require the minimum size at the maximum sound quality. Their parameters have been carefully selected to match the operating requirements in the rooms exposed to after-sound and high-humidity.

Thanks to the most advanced technologies the SP-S series loudspeakers combine excellent acoustic parameters and high aesthetics with resistance to mechanical damages and varying weather conditions. They are distinguished by easy and quick installation.

Quality standards and audio characteristics have been confirmed through tests and trials in an anechoic chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing.

The need to maintain the best acoustic parameters, even with easily installed fire-protecting screens, was the idea underlying the design process. The SP-S series loudspeakers ensure a balanced sound which is extremely important in emission of highly understandable speech and reliable music reproduction.

The series of ceiling-mounted SP-S loudspeakers is noticeable thanks to its elegant looks. The loudspeaker part which becomes visible after the installation is protected by means of electroplating and covered by a common and aesthetic white paint

coat (RAL 9003) – optionally available other colours (RAL palette).

The entire SP-S series is equipped with a standardized fire dome made of soft steel and supplied with two cable penetrations with rubber glands. Special jig for sling assembling facilitates quick installation. The delivery comprises the 1-metre long sling. Two ceramic blocks and fireproof wiring coupled with temperature limit fuse are located under the screen. This solution ensures 100% protection of the sound transmitting line from any break or short circuits which may be produced as a result of loud-speaker burn. The individual power rating is selected by means of connection with applicable transformer branch.

SP-S series loudspeakers equipped with fire dome and thermal protections entirely comply with EN 54-24 Standards. In order to ensure 100% consistency with the highest quality standards we test our loudspeakers following the most meticulous procedures that warrant high parameters of sound emission, safety, and reliability.

In spite of the fact our loudspeakers are designed for the highest reliability under fire conditions, their acoustic parameters and attractive low prices make them successful in any and all public address systems.

CHARACTERISTICS

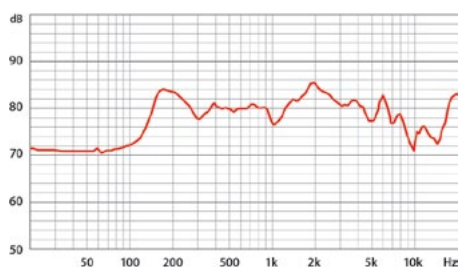
- » **Minimum dimensions**
- » **A and C working environment, ideal for bathrooms**
- » **Exceptionally reliable reproduction of full band music**
- » **The highest level of speech intelligibility**
- » **Elegant looks**
- » **6 W transformer allowing a precise selection of loudspeaker output power**
- » **100% protection of line from breaks and short-circuits**



SPECIFICATIONS

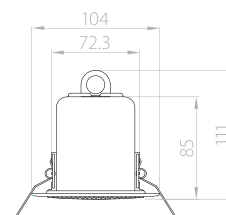
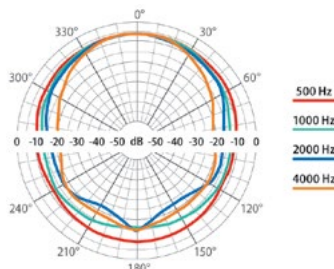
Model	SP-S106	SP-S136
Electrical		
Rated power, W	6	6
Tappings 100 V line according to EN 54-24, W	6 / 3 / 1,5 / 0,75	6 / 3 / 1,5 / 0,75
Tappings 70 V line, W	3 / 1,5 / 0,75 / 0,38	3 / 1,5 / 0,75 / 0,38
Transformer impedance @ 100 V, Ω	1667 / 3333 / 6667 / 13333	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8	8
Effective frequency range, Hz	100–20000	60–20000
Sensitivity @ 4 m, 1 W, dB	65	68
SPL @ 4 m, rated power, dB	76	78
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz–6 kHz	80	82
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz–6 kHz	88	90
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 170 / 150	180 / 180 / 170 / 90
Environmental		
Environmental type / IP rating according to EN 54-24	A, C / IP21C	A, C / IP21C
IP rating	32	32
Min./max. ambient temperature	-10°C / 55°C	-10°C / 55°C
Mechanical		
Dimensions, mm	Height 111, $\varnothing$ 104	Height 113, $\varnothing$ 134
Net weight, kg	0,72	0,82
Colour	White (RAL 9003)	
Material	Steel	
Mounting	Spring clamp	
Cut-out, mm	$\varnothing$ 85	$\varnothing$ 106
Option		
For DC line monitoring	Capacitor	
Colour optional	RAL palette	
Ease Model	✓	

Frequency band:

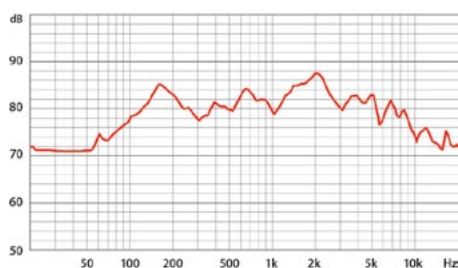


SP-S106

Circular chart of directional characteristic:

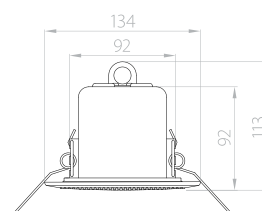
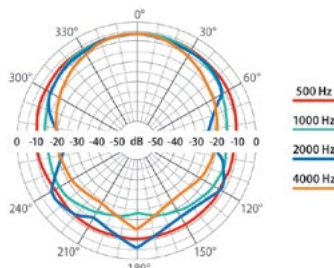


Frequency band:



SP-S136

Circular chart of directional characteristic:



SP-SW176X Surface Mounted Speaker Strobe

- ✓ Full Compliance with EN 54-24
- ✓ Certificate of Conformity: 1438-CPR-0738
- ✓ Compliance with BS5839-8 standard
(Thermal protection).

EN 54-24

The SP-SW176X is an multi-function loudspeaker designed to guarantee the highest acoustic parameters. SP-SW176X is equipped with a Xenon Strobe that provide visible notification in the case of emergency. The loudspeaker can be mounted either on a wall or on a ceiling.

Our loudspeakers are perfect on any circulation routes and in staircases located in shopping centres, offices, schools, hotels, hospitals, and industrial buildings. The loudspeaker mingles well with any interior and is virtually invisible thanks to its small dimensions and neat white finish.

The loudspeaker offers adjustable power regulation through connectivity to applicable transformer tapings thus allowing suitable acoustic pressure (the level of sound) within areas of sound emission adequately to the acoustic conditions existing in those areas.

To be quite sure our loudspeakers comply with the highest quality standards we test them thoroughly following the most meticulous procedures that warrant excellent parameters of sound emission, safety, and reliability. They are also recommended for use in any and all public address systems.

CHARACTERISTICS

- » Xenon Strobe for visible notifications
- » Easy and quick to mount
- » High quality sound of both speech and music
- » Ideal for on-wall or on-ceiling mounting
- » 6 W transformer with multiple branches ensuring accurate selection of output power



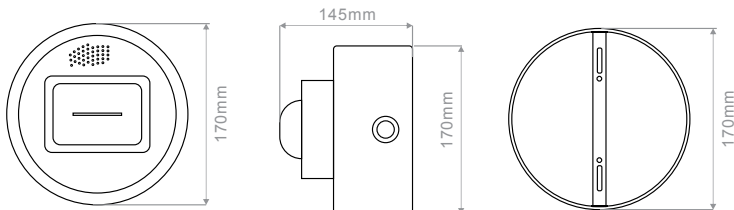
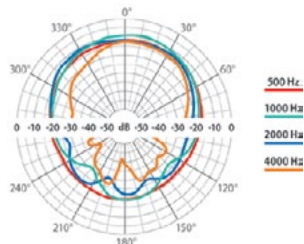
SPECIFICATIONS

Model	SP-SW176X
Electrical	
Rated power, W	6
Tappings 100 V line according to EN 54-24, W	6 / 3 / 1,5 / 0,75
Tappings 70V line, W	3 / 1,5 / 0,75 / 0,37
Transformer impedance @ 100 V, Ω	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8
Effective frequency range, Hz	130 – 20 000
Sensitivity @ 4 m, 1 W, dB	76
SPL @ 4 m, rated power, dB	82
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	88
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	94
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 175 / 75 / 40
Environmental	
Environmental type / IP rating according to EN 54-24	A / IP21C
IP rating	32
Min./max. ambient temperature	-10°C / 55°C
Mechanical	
Dimensions, mm	170 × 145
Net weight, kg	1,2
Colour	White (RAL 9003)
Material	Steel
Mounting	Screw
Option	
For DC line monitoring	Capacitor (SP-SW176XC)
Colour optional	RAL palette
Xenon Strobe	
Rated Voltage	24 VDC
Flash intensity	≥ 1.2 WS
Flash period	≤ 1,5 s

Frequency band:



Circular chart of directional characteristic:



SP-SW176 Surface Mounted Loudspeaker

- ✓ **Full Compliance with EN 54-24**
- ✓ **Certificate of Conformity: 1438-CPR-0738**
- ✓ **Compliance with BS5839-8 standard**
(Thermal protection).

EN 54-24



The SP-SW176 is an elegant multi-function loudspeaker designed to guarantee the highest acoustic parameters. The loudspeaker can be mounted either on a wall or on a ceiling.

Our loudspeakers are perfect on any circulation routes and in staircases located in shopping centres, offices, schools, hotels, hospitals, and industrial buildings.

The loudspeaker mingles well with any interior and is virtually invisible thanks to its small dimensions and neat white finish.

The loudspeaker offers adjustable power regulation through connectivity to applicable

transformer tapings thus allowing suitable acoustic pressure (the level of sound) within areas of sound emission adequately to the acoustic conditions existing in those areas.

To be quite sure our loudspeakers comply with the highest quality standards we test them thoroughly following the most meticulous procedures that warrant excellent parameters of sound emission, safety, and reliability. They are also recommended for use in any and all public address systems.

CHARACTERISTICS

- » **Easy and quick to mount**
- » **Modern and elegant design**
- » **High quality sound of both speech and music**
- » **Ideal for on-wall or on-ceiling mounting**
- » **6 W transformer with multiple branches ensuring accurate selection of output power**



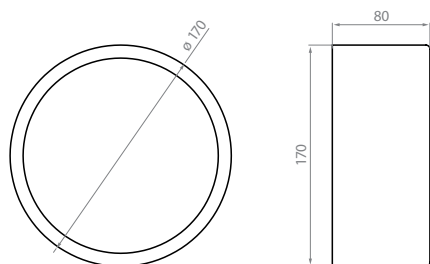
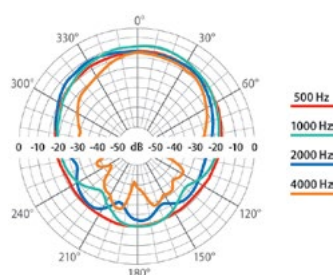
SPECIFICATIONS

Model	SP-SW176
Electrical	
Rated power, W	6
Tappings 100 V line according to EN 54-24, W	6 / 3 / 1,5 / 0,75
Tappings 70 V line, W	3 / 1,5 / 0,75 / 0,37
Transformer impedance @ 100 V, Ω	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8
Effective frequency range, Hz	130 – 20 000
Sensitivity @ 4 m, 1 W, dB	79
SPL @ 4 m, rated power, dB	85
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	91
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	97
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 90 / 65
Environmental	
Environmental type / IP Rating according to EN 54-24	A / IP21C
IP Rating	32
Min./max. ambient temperature	-10°C / 55°C
Mechanical	
Dimensions, mm	Height 80, $\varnothing$ 170
Net weight, kg	1,2
Colour	White (RAL 9003) / Black (RAL 9011)
Material	Steel
Mounting	Screw
Option	
For DC line monitoring	Capacitor (SP-SW176C)
Colour optional	RAL palette
Ease Model	✓

Frequency band:



Circular chart of directional characteristic:



SP-S203B/SP-S203BC Ceiling-Mounted Loudspeakers

- ✓ Full compliance with EN 54-24 Standard
- ✓ Certificate of Conformity: 1438-CPR-0605
- ✓ Compliance with BS5839-8 standard
(Thermal protection).
- ✓ Available in white and black

EN 54-24

Ceiling mounted fire alarm SP-S203B, SP-S203BC loudspeakers are designed for operations at high acoustic levels and the highest reduction in power supply. Actual wide band high efficiency ensures the best understanding of verbal messages. Their parameters have been carefully selected to comply with suspended ceiling applications, both at standard and considerably elevated ceiling-to-floor distance.

Thanks to the most advanced technologies SP-S203B, SP-S203BC loudspeakers combine excellent acoustic parameters and high aesthetics with resistance to mechanical damages. They are distinguished by easy and quick installation.

Quality standards and audio characteristics have been confirmed through tests and trials in an anechoic chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing.

The SP-S203B, SP-S203BC loudspeakers ensure a balanced sound which is extremely important in emission of highly understandable speech.

The SP-S203B, SP-S203BC loudspeakers are noticeable thanks to its elegant looks. The area of loudspeakers that is visible after the installation is covered by a common and aesthetic white paint coat (RAL 9003) – optionally available other colours (RAL palette).

SP-S203B, SP-S203BC are equipped with a standardized fire dome made of soft steel and supplied with two cable penetrations with rubber glands. Special jig for sling assembling facilitates quick installation. Ceramic blocks and fireproof wiring coupled with temperature limit fuse are located inside fire dome. The individual power rating is selected by means of connection with applicable transformer branch.

SP-S series loudspeakers equipped with fire dome and thermal protections entirely comply with EN 54-24 Standards. In order to ensure 100% consistency with the highest quality standards we test our loudspeakers following the most meticulous procedures that warrant high parameters of sound emission, safety, and reliability.

In spite of the fact our loudspeaker is designed for the highest reliability under fire conditions, their acoustic parameters and attractive low prices make them successful in any and all public address systems.

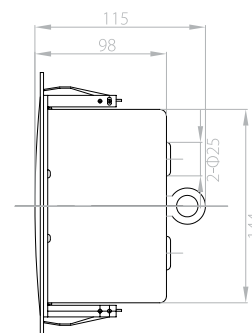
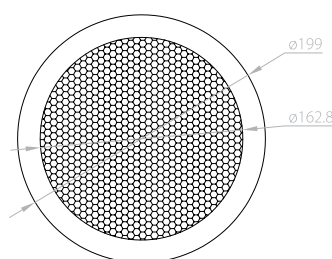
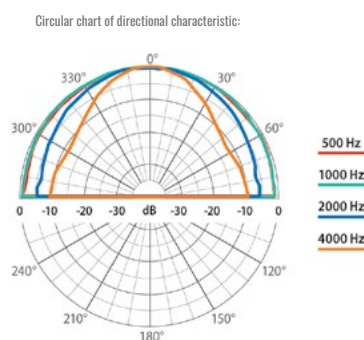
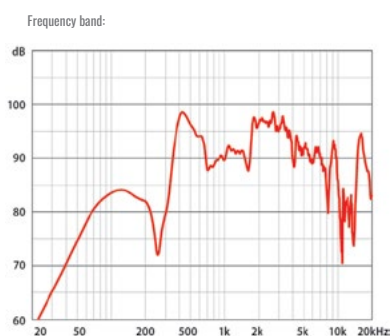
CHARACTERISTICS

- » The highest level of speech intelligibility
- » Elegant looks
- » 6 W transformer allowing a precise selection of loudspeaker output power
- » 100% protection of line from breaks and short-circuits



SPECIFICATIONS

Model	SP-S203B / SP-S203BC
Electrical	
Rated power, W	3
Tappings 70 V line, W	3 / 1,5 / 0,75 / 0,37
Transformer impedance @ 70 V, Ω	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8
Effective frequency range, Hz	120 – 20 000
Sensitivity @ 4 m, 1 W, dB	79
SPL @ 4 m, rated power, dB	84
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	91
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	96
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 95 / 70
Environmental	
Environmental type / IP rating according to EN 54-24	A / IP21C
IP rating	32C
Min./max. ambient temperature	-10°C / 55°C
Mechanical	
Dimensions, mm	Height 115, $\varnothing$ 199
Net weight, kg	1,13
Colour	White (RAL 9003) / Black (RAL 9011)
Material	Steel
Mounting	Spring clamp
Cut-out, mm	$\varnothing$ 175
Option	
For DC line monitoring	Capacitor (SP-S203BC)
Colour optional	RAL palette



SP-S206B Ceiling-Mounted Loudspeakers

- ✓ Full compliance with EN 54-24 Standard
- ✓ Certificate of Conformity: 1438-CPR-0605
- ✓ Compliance with BS5839-8 standard
(Thermal protection).

**EN 54-24**

Ceiling mounted fire alarm SP-S206B loudspeaker is designed for operations at high acoustic levels and the highest reduction in power supply. Actual wide band high efficiency ensures the best understanding of verbal messages. Its parameters have been carefully selected to comply with suspended ceiling applications, both at standard and considerably elevated ceiling-to-floor distance.

Thanks to the most advanced technologies SP-S206B loudspeaker combines excellent acoustic parameters and high aesthetics with resistance to mechanical damages. It is distinguished by easy and quick installation.

Quality standards and audio characteristics have been confirmed through tests and trials in an anechoic chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing.

The SP-S206B loudspeaker ensure a balanced sound which is extremely important in emission of highly understandable speech.

The SP-S206B loudspeaker is noticeable thanks to its elegant looks. The loudspeaker part which becomes visible after the installation is covered by a common and aesthetic white paint coat (RAL 9003) – optionally available other colours (RAL palette).

SP-S206B is equipped with a standardized fire dome made of soft steel and supplied with two cable penetrations with rubber glands. Special jig for sling assembling facilitates quick installation. Ceramic blocks and fireproof wiring coupled with temperature limit fuse are located inside fire dome. The individual power rating is selected by means of connection with applicable transformer branch.

SP-S series loudspeakers equipped with fire dome and thermal protections entirely comply with EN 54-24 Standards. In order to ensure 100% consistency with the highest quality standards we test our loudspeakers following the most meticulous procedures that warrant high parameters of sound emission, safety, and reliability.

In spite of the fact our loudspeaker is designed for the highest reliability under fire conditions, their acoustic parameters and attractive low prices make them successful in any and all public address systems.

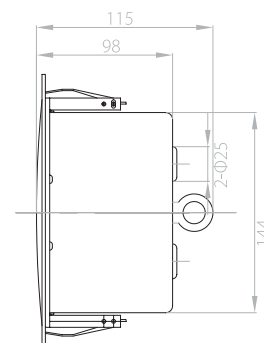
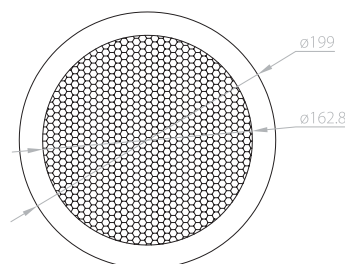
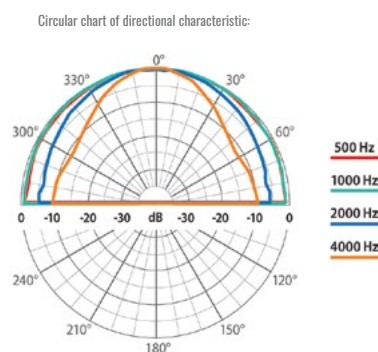
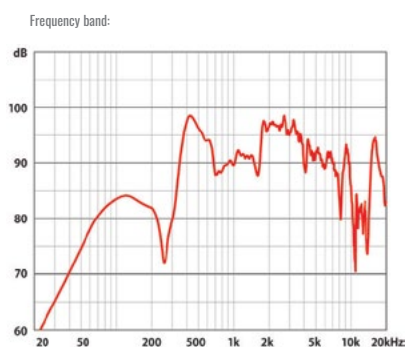
CHARACTERISTICS

- » The highest level of speech intelligibility
- » Elegant looks
- » 6 W transformer allowing a precise selection of loudspeaker output power
- » 100% protection of line from breaks and short-circuits



SPECIFICATIONS

Model	SP-S206B
Electrical	
Rated power, W	6
Tappings 100 V line according to EN 54-24, W	6 / 3 / 1,5 / 0,75
Tappings 70 V line, W	3 / 1,5 / 0,75 / 0,37
Transformer impedance @ 100 V, Ω	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8
Effective frequency range, Hz	120 – 20 000
Sensitivity @ 4 m, 1 W, dB	81
SPL @ 4 m, rated power, dB	88
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	93
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	101
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 95 / 70
Environmental	
Environmental type / IP rating according to EN 54-24	A / IP21C
IP rating	32C
Min./max. ambient temperature	-10°C / 55°C
Mechanical	
Dimensions, mm	Height 115, $\varnothing$ 199
Net weight, kg	1,13
Colour	White (RAL 9003) / Black (RAL 9011)
Material	Steel
Mounting	Spring clamp
Cut-out, mm	$\varnothing$ 175
Option	
For DC line monitoring	Capacitor (SP-S206BC)
Colour optional	RAL palette
Ease Model	✓



SP-W6 Wall-Mounted Loudspeaker

- ✓ Full compliance with EN 54-24 standards.
- ✓ Certificate of Conformity issued by CNBOP: 1438-CPR-0480.
- ✓ Compliance with BS5839-8 standard (Thermal protection).
- ✓ Exceptionally easy and quick to mount.
- ✓ Modern and elegant design.
- ✓ High quality sound of both speech and music.
- ✓ Ideal for on-wall or in-wall mounting.

EN 54-24

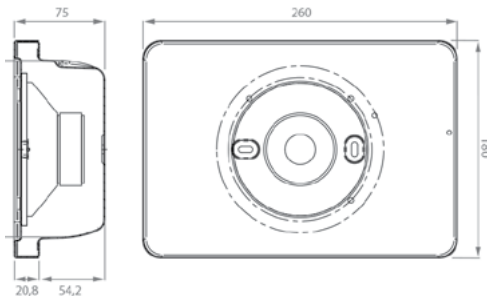


The SP-W6 is an elegant multi-function loudspeaker designed to guarantee the highest acoustic parameters. Its solid casing offers an effective protection against acts of vandalism. The loudspeaker can be mounted either on a wall or on a ceiling. Additionally, the SP-W6 can be

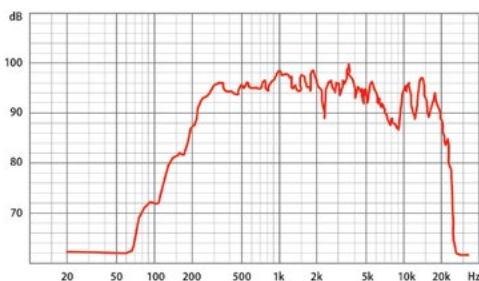
fixed as an recessed speaker and therefore it is an ideal solution for rooms where aesthetic factors play a significant role.

The loudspeaker offers adjustable power regulation through connectivity to applicable transformer tapings thus

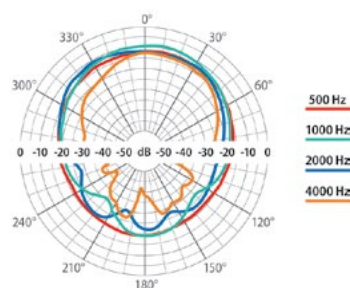
allowing suitable acoustic pressure (the level of sound) within areas of sound emission adequately to the acoustic conditions existing in those areas.



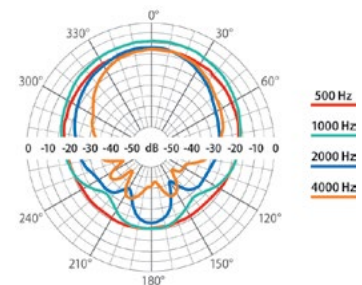
Frequency band:



Circular chart of directional characteristic - horizontal:



Circular chart of directional characteristic - vertical:



SPECIFICATIONS

Model	SP-W6
Electrical	
Rated power, W	6
Tappings 100 V line, W	6 / 3 / 1.5 / 0.75
Tappings 70 V line, W	3 / 1.5 / 0.75 / 0.375
Transformer impedance, Ω	1667 / 3333 / 6667 / 13333
Driver impedance, Ω	8
Effective frequency range, Hz	120 – 20 000
Sensitivity @ 4 m, 1 W, dB	80
SPL @ 4 m, Rated power, dB	84
SPL @ 1 m, 1 W, dB, Test signal bandwidth 300 Hz – 6 kHz	94
SPL @ 1 m, Rated power, dB, Test signal bandwidth 300 Hz – 6 kHz	98
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	180 / 180 / 163 / 80
Environmental	
Environmental type / IP Rating according to EN 54-24	A / IP21C
IP Rating	32
Min / Max Amb Temp	-10°C / 55°C
Mechanical	
Dimensions, mm	260 x 180 x 80
Net Weight, kg	2.3
Colour	White (RAL 9003)
Material	Steel
Mounting	Screw
Option	
For DC line monitoring	Capacitor
Colour optional	RAL Palette

SP-P10 /SP-P10P SOUND PROJECTORS

- ✓ **Compliance with EN 54-24**
- ✓ **Certificate of Conformity: 1438-CPR-0701**
- ✓ **Compliance with BS5839-8 standard**
(Thermal protection).

Fire alarm SP-P10, SP-P10P loudspeakers have been designed and manufactured for the most demanding customers as well as to meet the requirements of the most complex and sophisticated sound transmitting applications. Thanks to the contribution of advanced technologies they combine excellent acoustic parameters and high aesthetics with resistance to mechanical damages and varying weather conditions as well as low prices. Their additional quality is an exceptionally quick and simple installation.

Quality standards and audio characteristics have been confirmed through tests and trials in an anechoic chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing. The need to maintain the best acoustic parameters was the idea underlying the design process.

SP-P loudspeaker models emitting the sound which features directional characteristic and high efficiency. 5-inch 2-cone wide band loudspeakers used in these series are excellent alternative solution for horn-type units due to wide frequency band. They prove excellent in both musical and verbal applications. SP-P10 and SP-P10P loudspeakers are enclosed in round casings made of resistant and durable ABS; they feature a high class of protection from humidity. Thanks to directional characteristic of sound propagation our loudspeakers are mostly applied on circulation routes and in

wide area sound emission. Due to resistance to weather conditions the loudspeakers prove excellent in industrial halls, warehouses, as well as partly open spaces exposed to outdoor weather conditions.

Apart from high mechanical and functional resistance SP-P loudspeakers entirely comply with global requirements for systems, including also the British Standard No. BS5839 Part 8 and EN 54-24.

All SP-P loudspeakers have built-in a ceramic connection block and a thermal fuse. Two sound-transmission cable penetrations in the casing are insulated by means of two cable glands. Inside the fire zone the loudspeaker is isolated from the entire line, which ensures line continuity and uninterrupted broadcasting of emergency messages. The individual power rating is selected by means of connection with applicable transformer branch.

SP-P loudspeakers are designed for continuous operations at rated parameters for at least 100 hours in compliance with the IEC-268-5 Standard.

SP-P10P loudspeakers are designed for pendant mounting. They are equipped with an additional junction box enabling simple and quick speaker installation. They are used wherever the distance from ceiling mounted speaker is too large.


EN 54-24


CHARACTERISTICS

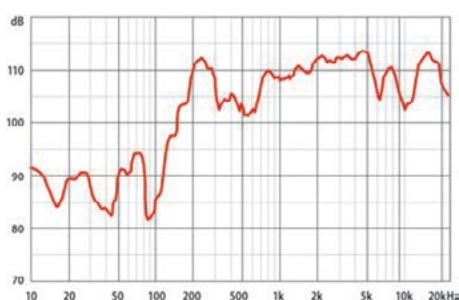
- » **Designed to achieve directional characteristic of sound emission**
- » **10 W transformer with multiple branches ensuring accurate selection of output power**
- » **Enclosed in an advance and functional cylindrical casing made of resistant and durable ABS**
- » **Ideal for either ceiling or wall installation**
- » **Durable casing with ceramic block and thermal fuse**
- » **High sound quality in music and speech emission**



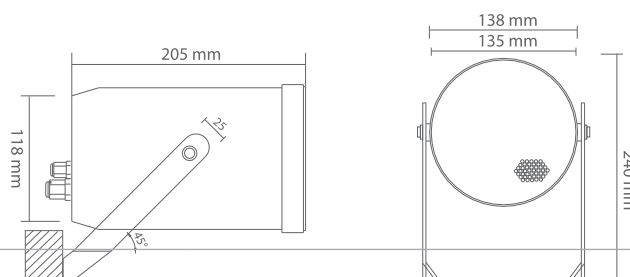
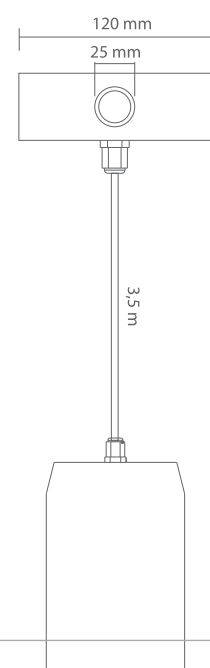
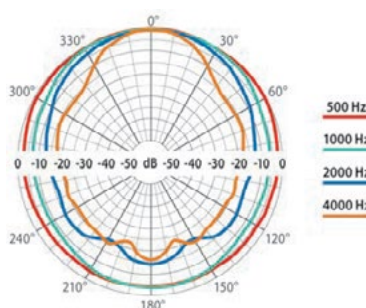
SPECIFICATIONS

Model	SP-P10 / SP-P10P
Electrical	
Rated power, W	10
Tappings 100 V line according to EN 24-54, W	10 / 5 / 2,5 / 1,25
Tappings 70 V line, W	5 / 2,5 / 1,25 / 0,625
Transformer impedance @ 100 V, Ω	1000 / 2000 / 4000 / 8000
Driver impedance, Ω	8
Effective frequency range, Hz	130 – 20000
Sensitivity @ 4 m, 1 W, dB	80
SPL @ 4 m, rated power, dB	88
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	92
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	100
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 210 / 120 / 65
Environmental	
Environmental type / IP rating according to EN 54-24	B / IP33C
IP rating*	66
Min. / max. ambient temperature	-25°C / 70°C
Mechanical	
Dimensions, mm	Length 205, $\varnothing$ 135
Net weight, kg	1,6
Colour	White (RAL 9003)
Material	ABS
Mounting	Screw, U type bracket
Option	
For DC line monitoring	Capacitor (SP-P10C / SP-P10PC)
Ease Model	✓

Frequency band:



Circular chart of directional characteristic:



SP-P20 /SP-P20P SOUND PROJECTORS

- ✓ **Compliance with EN 54-24**
- ✓ **Certificate of Conformity: 1438-CPR-0702**
- ✓ **Compliance with BS5839-8 standard**
(Thermal protection).

Fire alarm SP-P20, SP-P20P loudspeakers have been designed and manufactured for the most demanding customers as well as to meet the requirements of the most complex and sophisticated sound transmitting applications. Thanks to the contribution of advanced technologies they combine excellent acoustic parameters and high aesthetics with resistance to mechanical damages and varying weather conditions as well as low prices. Their additional quality is an exceptionally quick and simple installation.

Quality standards and audio characteristics have been confirmed through tests and trials in an anechoic chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing. The need to maintain the best acoustic parameters was the idea underlying the design process.

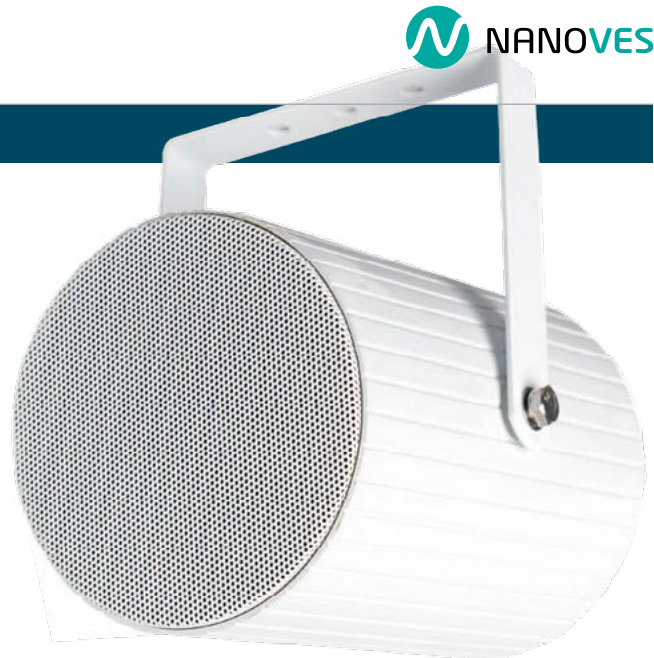
SP-P loudspeaker models emitting the sound which features directional characteristic and high efficiency. 5-inch 2-cone wide band loudspeakers used in these series are excellent alternative solution for horn-type units due to wide frequency band. They prove excellent in both musical and verbal applications. SP-P20 and SP-P20P loudspeakers are enclosed in round casings made of extruded aluminium; they feature a high class of protection from humidity. Thanks to directional characteristic of sound propagation our loudspeakers are mostly applied on circulation routes and in wide area sound emission. Due to resistance to weather conditions the loudspeakers prove excellent in industrial halls, warehouses, as well as partly

open spaces exposed to outdoor weather conditions. Apart from high mechanical and functional resistance SP-P loudspeakers entirely comply with global requirements for systems, including also the British Standard No. BS5839 Part 8 and EN 54-24.

Technical solutions applied in the design ensure continuous operations of sound-transmitting line connected with the loudspeaker even in the case the latter is damaged or burnt as a result of fire. The said protection is composed of ceramic blocks installed inside the loudspeaker, internal fireproof wiring, and temperature limit fuse. Two sound-transmission cable penetrations in the casing are insulated by means of two cable glands. Inside the fire zone the loudspeaker is isolated from the entire line, which ensures line continuity and uninterrupted broadcasting of emergency messages. The individual power rating is selected by means of connection with applicable transformer branch.

SP-P loudspeakers are designed for continuous operations at rated parameters for at least 100 hours in compliance with the IEC-268-5 Standard.

SP-P20P loudspeakers are designed for pendant mounting. They are equipped with an additional junction box enabling simple and quick speaker installation. They are used wherever the distance from ceiling mounted speaker is too large.



CHARACTERISTICS

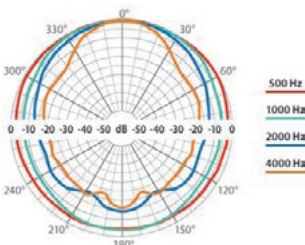
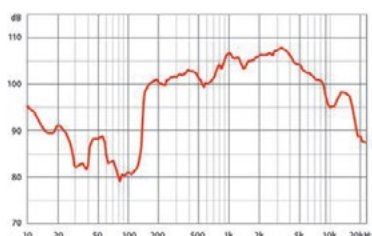
- » **Designed to achieve directional characteristic of sound emission**
- » **20 W transformer with multiple branches ensuring accurate selection of output power**
- » **Enclosed in an advance and functional cylindrical casing made of extruded aluminium**
- » **Ideal for either ceiling or wall installation**
- » **Fireproof casing with ceramic block and thermal fuse**
- » **High sound quality in music and speech emission**



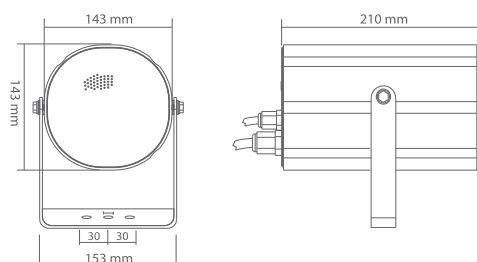
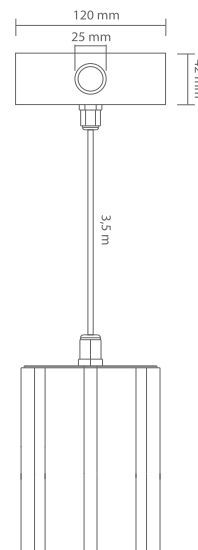
SPECIFICATIONS

Model	SP-P20 /SP-P20P
Electrical	
Rated power, W	20
Tappings 100 V line according to EN 24-54, W	20 / 10 / 5 / 2,5
Tappings 70 V line, W	10 / 5 / 2,5 / 1,25
Transformer impedance @ 100 V, Ω	500 / 1000 / 2000 / 4000
Driver impedance, Ω	8
Effective frequency range, Hz	130 – 20000
Sensitivity @ 4 m, 1 W, dB	79
SPL @ 4 m, rated power, dB	90
SPL @ 1 m, 1 W, dB, test signal bandwidth 300 Hz – 6 kHz	91
SPL @ 1 m, rated power, dB, test signal bandwidth 300 Hz – 6 kHz	102
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 230 / 110 / 65
Environmental	
Environmental type / IP rating according to EN 54-24	B / IP33C
IP rating*	66
Min. / max. ambient temperature	-25°C / 70°C
Mechanical	
Dimensions, mm	Length 210, $\varnothing$ 143
Net weight, kg	2,4
Colour	White (RAL 9003)
Material	Aluminium
Mounting	Screw, U type bracket
Option	
For DC line monitoring	Capacitor (SP-P20C / SP-P20PC)
Colour optional	RAL palette
Ease Model	✓

Frequency band:



Circular chart of directional characteristic:



SP-SMSP20 Sound Projectors

✓ Full compliance with EN 54-24 Standards.

EN 54-24



These sound projectors have been designed and manufactured for the most demanding customers as well as to meet the requirements of the most complex and sophisticated sound transmitting applications.

Quality standards and audio characteristics have been confirmed through multiple tests and trials we have applied for many years, including e.g. our own echo-proof chamber, resistance and integrity testing equipment, as well as chambers for resistance to varying weather and air humidity testing. The need to maintain the best acoustic parameters was the idea underlying the design process.

This loudspeaker models emit the sound which features directional characteristic and high efficiency. 5-inch 2-cone wide band loudspeakers used in these series are excellent alternative solution for horn-type units due to wide frequency band. They prove excellent in both musical and verbal applications. Loudspeakers are enclosed in round casings made of polished extruded aluminium; they feature a high class of protection from humidity. Thanks to directional characteristic of sound propagation our loudspeakers are mostly applied on circulation routes and in wide area sound emission. Due to resistance to weather conditions the loudspeakers prove excellent in industrial halls, warehouses, as well as partly open spaces exposed to outdoor weather conditions.

Apart from high mechanical and functional resistance these loudspeakers entirely comply with global requirements for systems, including also the British Standard No. BS5839 Part 8 and EN 54-24.

Technical solutions applied in the design ensure continuous operations of sound-transmitting line connected with the loudspeaker even in the case the latter is damaged or burnt as a result of fire. The said protection is composed of up to 650°C temperature-proof ceramic blocks installed inside the loudspeaker, internal fireproof wiring, and temperature limit fuse. Two sound-transmission cable penetrations in the casing are insulated by means of two rubber cable glands. Inside the fire zone the loudspeaker is isolated from the entire line, which ensures line continuity and uninterrupted broadcasting of fire escape messages. The individual power rating is selected by means of connection with applicable transformer branch.

All these loudspeakers are designed for continuous operations at rated parameters for at least 100 hours in compliance with the IEC-268-5 Standard.

To be quite sure our loudspeakers comply with the highest quality standards we test them thoroughly following the most meticulous procedures that warrant excellent parameters of sound emission, safety and reliability.

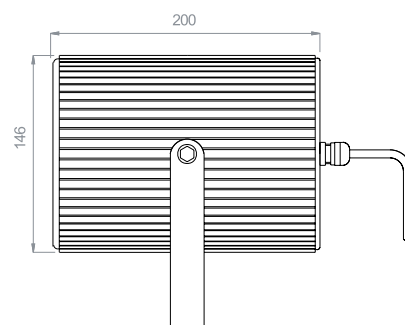
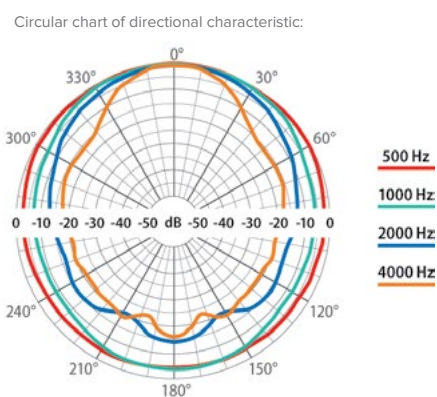
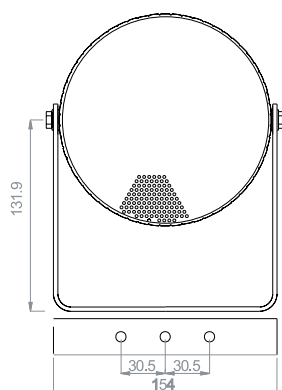
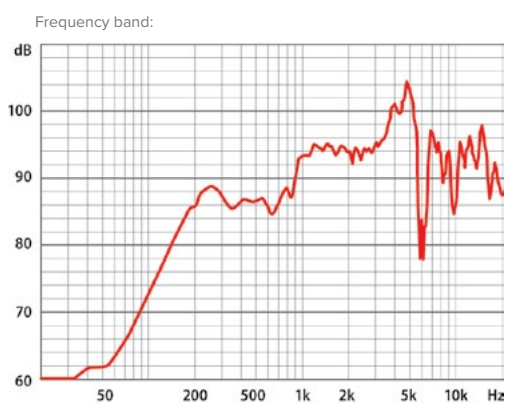
SPECIFICATIONS

- *Designed to achieve directional characteristic of sound emission.*
- *20 W transformer with multiple branches ensuring accurate selection of output power.*
- *Enclosed in an advance and functional cylindrical casing made of extruded aluminium, available in silver – optionally in any colour according to the RAL Palette.*
- *Ideal for either ceiling or wall installation.*
- *Two gland-insulated penetrations for external cabling.*
- *Fireproof casing with ceramic block and temperature limit fuse.*
- *Fireproof internal wiring.*
- *High sound quality in music and speech emission.*



SPECIFICATIONS

Model	SP-SMSP20
Electrical	
Rated power, W	20
Tappings 100 V line, W	20 / 10 / 5 / 2.5
Transformer impedance, Ω 100 V	500 / 1000 / 2000 / 4000
Driver impedance, Ω	8
Effective frequency range, Hz	150 – 20000
Sensitivity @ 4 m, 1 W, dB	78
SPL @ 4 m, Rated power, dB	92
SPL @ 1 m, 1 W, dB, Test signal bandwidth 300 Hz – 6 kHz	92
SPL @ 1 m, Rated power, dB, Test signal bandwidth 300 Hz – 6 kHz	105
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	98
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 230 / 140 / 65
Environmental	
Environmental type / IP Rating according to EN 54-24	B / IP33C
IP Rating	66
Min / Max Amb Temp	-25°C / 70°C
Mechanical	
Dimensions, mm	Length 200, ϕ 146
Net Weight, kg	2.5
Colour	Light Grey (RAL 7035)
Material	Aluminium
Mounting	Screw, U Type bracket
Option	
For DC line monitoring	Capacitor
Colour optional	RAL Palette



SP-T1510 / T2215 / T2430 Horn-Type Loudspeakers

✓ **Full compliance with EN 54-24 Standards.**

EN 54-24



Horn-type loudspeakers are designed for either simple or most complex and sophisticated sound-transmitting applications. They combine excellent acoustic parameters and high aesthetics with resistance to mechanical damages and varying weather conditions as well as simple assembling and low price. Quality standards and audio characteristics have been confirmed through tests and trials employing echo-proof chamber, resistance and integrity testing equipment, as well as chambers for resistance to weather and air humidity testing.

These comprises highly efficient loudspeakers which produce sounds featuring directional characteristics and operate in any atmospheric conditions (A, B, C environmental type). Thanks to their balanced frequency band they guarantee high understanding of verbal communication. Furthermore, they can transmit musical background. Their casings are made of ABS UL94VO, a synthetic material featuring high resistance to mechanical damages and self-extinguishing properties. Loudspeakers are perfectly protected from dust and humidity (IP66). The assembling jig ensures adjusting the inclination for the optimum coverage of the area of communications.

These loudspeakers are applied on circulation routes and inside the rooms with high after-sound as well as in widespread outdoor area broadcasting. They are unparalleled on sport sites, at

swimming pools, in expo and industrial halls, warehouses, open and underground car parks, and in open areas such as e.g. stadiums, parks, etc.

These loudspeakers entirely comply with global requirements concerning evacuation systems, including the standards such as BS5839 Part 8 and EN 54-24. Ceramic blocks, internal flame-resistant wiring, and temperature limit fuses protect the broadcasting line from short-circuits or breaks and ensure continuous operations even in case of fire-produced damages or burns. The loudspeaker located in the zone of fire is isolated from the sound-transmitting line. A special design eliminates the risk of fall of any of its burnt components, which ensures safe fire escape process. This feature has been confirmed by means of the most rigorous testing under the temperature of 822°C ambient temperature.

This loudspeaker offer comprises three power rating models, i.e. 10 W, 15 W, and 30 W. The individual rated power is selected by means of connection with applicable transformer branch. All these loudspeakers are designed so as to ensure continuous operations at rated parameters for at least 100 hours (consistent with IEC-268-5 Standard).

In spite of the fact our loudspeakers are designed for the highest reliability under fire conditions, they can be also used in any and all public address systems.

SPECIFICATIONS

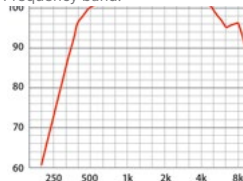
- *Directional characteristic of sound emission and the highest verbal communication understanding.*
- *High efficiency:*
 SP-T1510 – 103 dB / 1 W
 SP-T2215 – 104 dB / 1 W
 SP-T2430 – 105 dB / 1 W
- *All the working environments A, B and C.*
- *Wall and ceiling installation.*
- *Protection from dust and humidity: IP66 rating.*
- *Two cable penetrations insulated by means of impedance coils.*
- *Casing made of self-extinguishing ABS UL94VO plastic, with steel assembling jig.*
- *Tested at the temperature of 822°C.*
- *100% line protection from short-circuit and break in fire conditions.*

SPECIFICATIONS

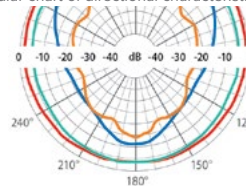
Model	SP-T1510	SP-T2215	SP-T2430
Electrical			
Rated power, W	10	15	30
Tappings 100 V line, W	10 / 5 / 2.5 / 1.25	15 / 7.5 / 3.75 / 1.87	30 / 15 / 7.5 / 3.75
Transformer impedance, Ω 100 V	1000 / 2000 / 4000 / 8000	667 / 1330 / 2770 / 5330	333 / 666 / 1330 / 2660
Driver impedance, Ω	8	8	8
Effective frequency range, Hz	340 – 9000	460 – 9000	400 – 7500
Sensitivity @ 4 m, 1 W, dB	86	87	88
SPL @ 4 m, Rated power, dB	104	108	113
SPL @ 1 m, 1 W, dB, Test signal bandwidth 300 Hz – 6 kHz	103	104	105
SPL @ 1 m, Rated power, dB, Test signal bandwidth 300 Hz – 6 kHz	113	116	120
Dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	240 / 200 / 88 / 45	180 / 121 / 68 / 36	180 / 120 / 75 / 41
Environmental			
Environmental type / IP Rating according to EN 54-24	B / IP33C	B / IP33C	B / IP33C
IP Rating	66	66	66
Min / Max Amb Temp	-25°C / 70°C	-25°C / 70°C	-25°C / 70°C
Mechanical			
Dimensions, mm	Lenght 236, $\varnothing$ 156	Lenght 284, $\varnothing$ 216	Lenght 325, $\varnothing$ 233
Net Weight, kg	1.57	1.74	2.11
Colour	Light Grey (RAL 7035)	Light Grey (RAL 7035)	Light Grey (RAL 7035)
Material	ABS UL94V0	ABS UL94V0	ABS UL94V0
Mounting	Screw, U Type Bracket	Screw, U Type Bracket	Screw, U Type Bracket
Option			
For DC line monitoring	Capacitor	Capacitor	Capacitor
Colour optional	RAL Palette	RAL Palette	RAL Palette

SP-T1510

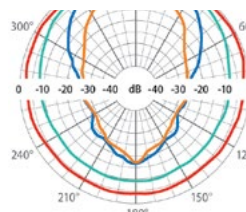
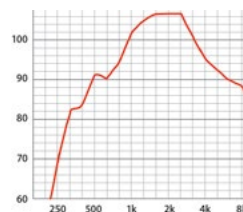
Frequency band:



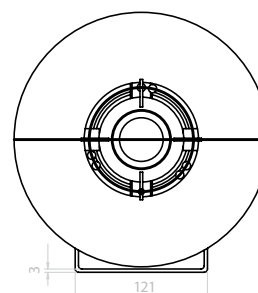
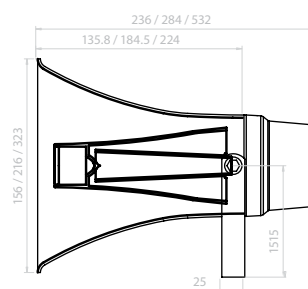
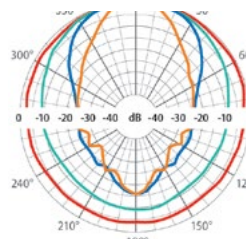
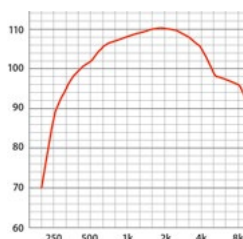
Circular chart of directional characteristic:



SP-T2215



SP-T2430



SP-HP240EN96 / SP-HP120EN96 High Power Loudspeaker

- ✓ Full compliance with EN 54-24 Standards.
- ✓ 240 W and 120 W transformers 100 V.
- ✓ Highest level of speech intelligibility.
- ✓ Waterproof housing IP65.
- ✓ Wide frequency range suitable for music.

EN 54-24

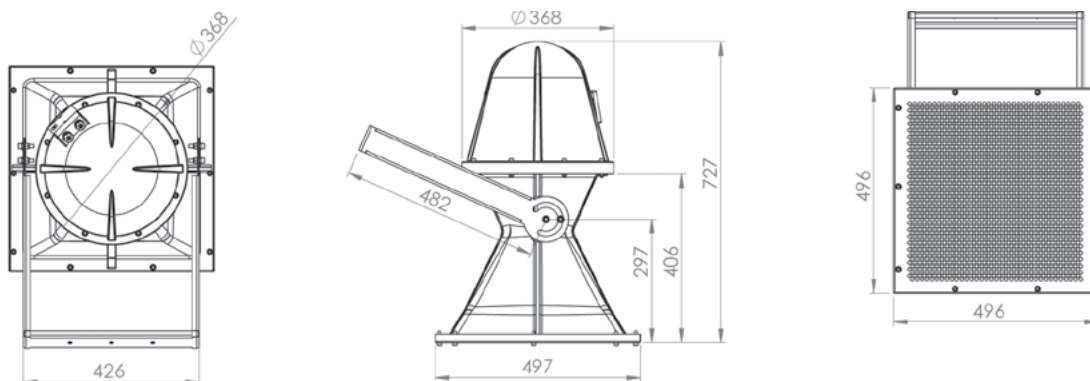

SP-HP240EN96 and ABT-HP120HP96 are powerful loudspeakers designed to amplify large objects. They are two-way loudspeaker equipped with electroacoustic transducers 12" + 1.75" and 8" + 1.3". These speakers sets have a wide effective frequency band, which is perfect for the transmission of verbal and musical communication.

Universal mounting method allows to mount the speakers in a simple manner. Waterproof housing makes that it can be successfully used outdoors (stadiums, halls, etc.).

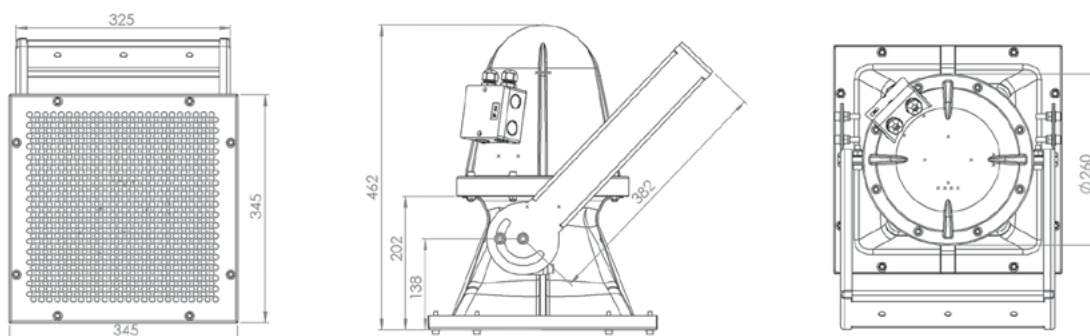
SP-HP240EN96 and SP-HP120EN96 are equipped with the necessary instrumentation required to connect

them to the voice evacuation system. Between the ceramic block and speaker transformer there is installed thermal fuse isolating transformer from a loudspeaker line.

SP-HP240EN96



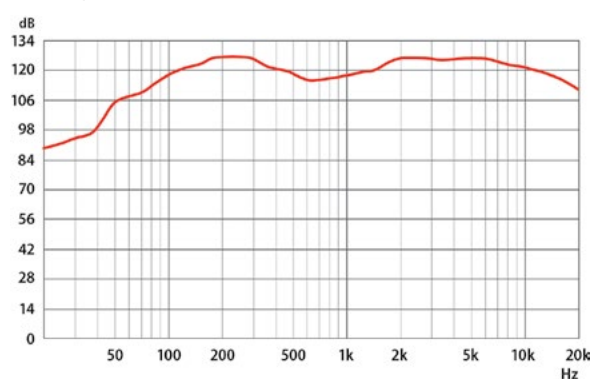
SP-HP120EN96



SPECIFICATIONS

Model	SP-HP240EN96	SP-HP120EN96
Electrical		
Number of transducers	240	120
Tappings, W	240 / 120 / 60	120 / 60 / 30
Transformer impedance, Ω 100 V	42 / 84 / 167	84 / 167 / 333
Driver impedance, Ω	8	8
Effective frequency range, Hz	65 – 20 000	85 – 20 000
Sensitivity, dB	95	92
SPL @ 1 m, max power, dB	125	119
Dispersion, H x V, [°]	90 x 40 / 90 x 60 / 60 x 60	90 x 40 / 90 x 60 / 60 x 60
Environmental		
Environmental type	B	
IP Rating	65	
Min / Max Amb Temp	-25°C / 70°C	
Mechanical		
Dimensions, mm	497 x 497 x 727	345 x 345 x 462
Net Weight, kg	29	16
Colour	Black (RAL 9005)	
Material	Glass fiber	
Mounting	U Type Bracket	
Option		
Colour optional	RAL Palette	

Frequency band:



SP-LA30/SP-LA60 Line Array Loudspeakers

✓ Full compliance with EN 54-24 Standards.

These Line Array loudspeakers mean a new quality among the facilities of the kind. SP-LA30 and SP-LA60 units are line-array loudspeaker columns, which means they ensure considerably farther reach than conventional units at simultaneous maintenance of high uniformity of sound level in the area of broadcasting. Being line-array acoustic sources, these columns feature a unique high directionality in vertical plane so that the sound they generate will rather go exactly towards the controlled audiospace instead of unwanted areas, such as e.g. ceiling or floor. These columns are mostly designed for the rooms with high reverberation time as well as for other places where the quality of speech is reduced due to unfavourable conditions.

The design allows easy mechanical and electrical integration of the two columns into a single consistent unit which becomes a loudspeaker with higher power output and farther reach. It makes a better use of the benefits offered by the line-array source. Variable geometry of the column allows generating two sound beams to be randomly sent at various angles to the two different areas. Sound transfer band of these columns has been designed to achieve the highest possible fidelity of speech signal reproduction and to ensure unchallenged parameters of the quality of speech, all as required by the standards applicable to the Voice Evacuation Systems.

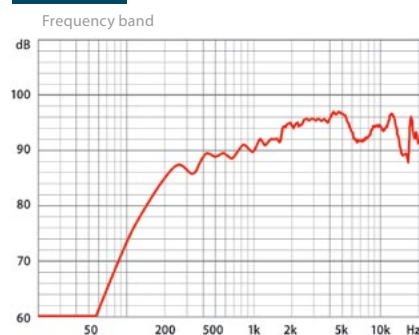
Solid aluminium enclosure, steel assembly jigs, and IP 65 guarantee long-term failure-free operations under any conditions, both in outdoor and indoor environments. The columns are entirely dustproof and resistant to the impact of direct water jet.

EN 54-24Connect angle:
 $-15^{\circ} \div +15^{\circ}$ 

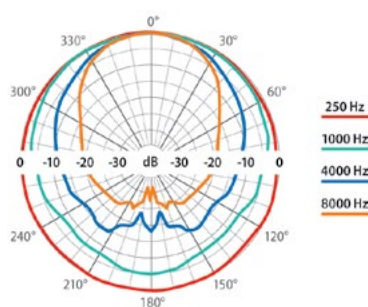
SPECIFICATIONS

Model	SP-LA30	SP-LA60
Electrical		
Maximum power, W	48	96
Rated power, W	30	60
Tappings 100 V line, W	30 / 15 / 7.5 / 3.75	60 / 30 / 15 / 7.5
Transformer impedance, Ω 100 V	333.3 / 666.6 / 1333.3 / 2631.5	166.6 / 333.3 / 666.6 / 1333.3
Driver impedance, Ω	12	6
Effective frequency range, Hz	14 – 20 000	136 – 20 000
Sensitivity @ 4 m, 1 W, dB	80	81
SPL @ 4m, Rated power, dB	95	99
SPL @ 1 m, 1 W, dB, Test signal bandwidth 300 Hz – 6 kHz *	92	96
SPL @ 1 m, Rated power, dB, Test signal bandwidth 300 Hz – 6 kHz *	107	114
Horizontal coverage angle at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 220 / 180 / 110	360 / 230 / 160 / 110
Vertical coverage angle at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	160 / 70 / 36 / 18	70 / 30 / 16 / 8
Environmental		
Environmental type / IP Rating according to EN 54-24	B / IP33C	B / IP33C
IP Rating	65	65
Min / Max Amb Temp	-25°C / 70°C	-25°C / 70°C
Mechanical		
Dimensions H x W x D, mm	510 x 80 x 110	870 x 80 x 110
Net Weight, kg	2.8	5.5
Colour	Silver (RAL 9006)	Silver (RAL 9006)
Enclosure material	Aluminium	Aluminium
Option		
For DC line monitoring	Capacitor	Capacitor
Colour optional	RAL Palette	RAL Palette

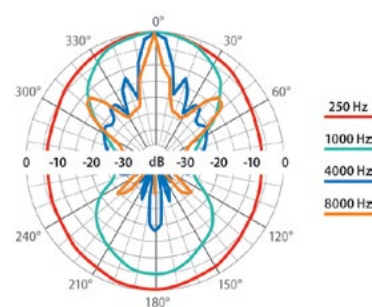
SP-LA30



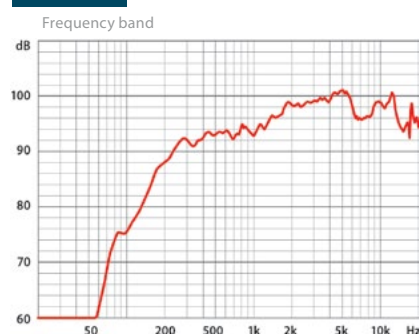
Circular chart of directional characteristic – horizontal:



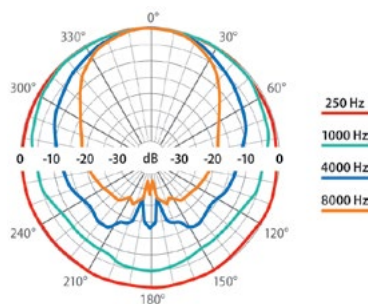
Circular chart of directional characteristic – vertical:



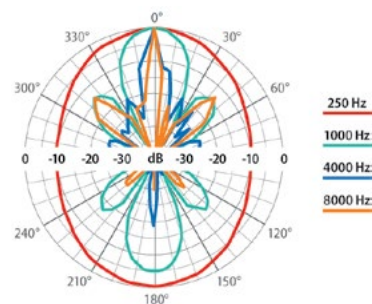
SP-LA60



Circular chart of directional characteristic – horizontal:



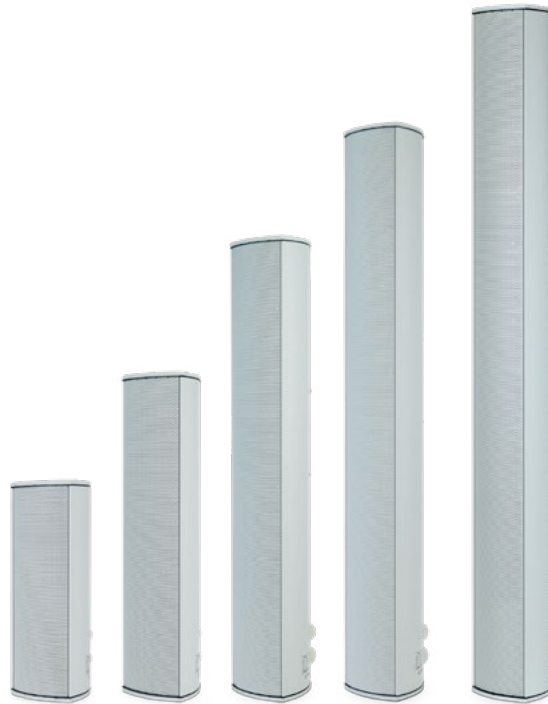
Circular chart of directional characteristic – vertical:



SP-LA10B / SP-LA20B, SP-LA30B / SP-LA40B, SP-LA50B / SP-LA60B, SP-LA80B / SP-LA100B Loudspeakers Columns

- ✓ Full compliance with EN 54-24 Standard
- ✓ Certificate of Conformity: 1438-CPR-0605
- ✓ Compliance with BS5839-8 standard
(Thermal protection).

EN 54-24



SP-LA10B, SP-LA20B, SP-LA30B, SP-LA40B, SP-LA50B, SP-LA60B, SP-LA80B, SP-LA100B loudspeakers are Type B loudspeakers.

They provide much further coverage while maintaining high sound level uniformity in the publicized area. SP-LAB loudspeakers are characterized by high directivity, so the sound emitted by the loudspeaker is directed precisely to the listening area and not to undesired areas, such as the ceiling or floor. SP-LAB are dedicated primarily for rooms with long reverberation times and unfavorable acoustic conditions for speech intelligibility. The frequency response of

SP-LAB speakers has been designed for most accurate reproduction of the speech signal, to provide the highest speech intelligibility required in PAVA systems.

They are also perfectly suited for music broadcasting. Robust aluminum housing that provides the degree of protection to environmental parameters IP65 and mechanical impact IK07 guarantees long, trouble-free operation in all conditions

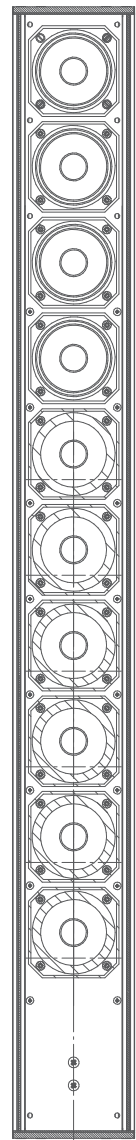
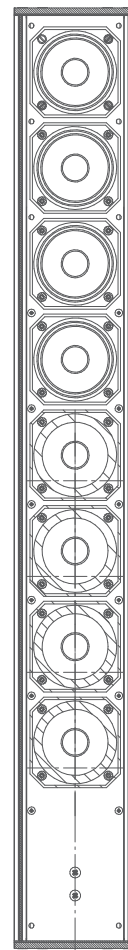
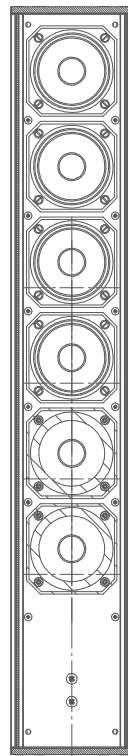
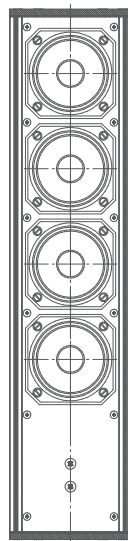
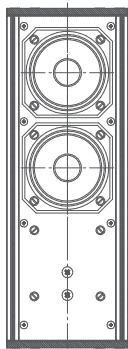
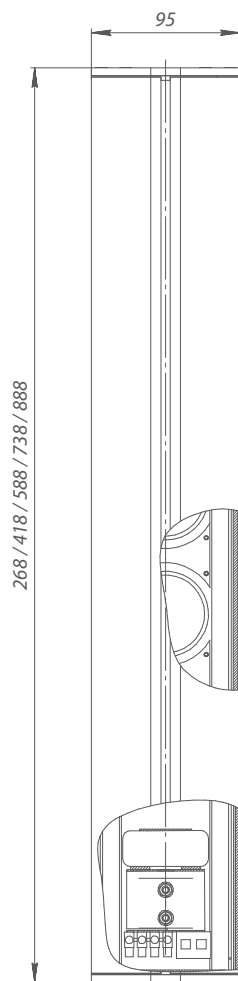
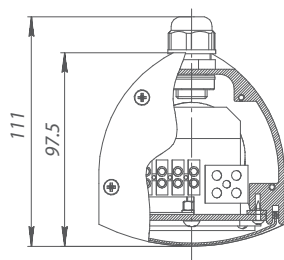
CHARACTERISTICS

- » Easy and quick installation
- » High sound quality of both speech and music
- » Highest level of speech intelligibility
- » Ideal for mounting on a ceiling, wall or pole.
- » Two cable inputs insulated with glands
- » Weatherproof housing IP65
- » For indoor and outdoor application

SPECIFICATIONS

Model	SP-LA10B	SP-LA20B	SP-LA30B	SP-LA40B
Electrical				
Rated power, W	10	20	30	40
Tappings 100 V line, W	10 / 5 / 2,5	20 / 10 / 5	30 / 15 / 7,5	40 / 20 / 10
Tappings 70 V line, W	5 / 2,5 / 1,25	10 / 5 / 2,5	15 / 7,5 / 3,75	20 / 10 / 2005
Transformer impedance @ 100 V, Ω	1000 / 2000 / 4000	500 / 1000 / 2000	333 / 667 / 1333	250 / 500 / 1000
Driver impedance, Ω	8	4	10	8
Effective frequency range, Hz	160 – 20000	160 – 20000	160 – 20000	160 – 20000
Sensitivity @ 4 m, 1 W, dB	71	74	76	77
SPL @ 4 m, Rated power, dB	82	87	90	92
SPL @ 1 m, 1 W, dB	83	89	88	89
SPL @ 1 m, Rated power, dB	94	99	102	104
Horizontal dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 210 / 150 / 110	360 / 200 / 155 / 120	360 / 200 / 155 / 115	360 / 200 / 155 / 120
Vertical dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 130 / 80 / 40	145 / 80 / 35 / 20	110 / 60 / 30 / 15	85 / 40 / 20 / 10
Environmental				
Environmental type	Type B			
IP rating	IP65			
Min. / max. ambient temperature	-25°C / 55°C			
Mechanical				
Dimensions, mm	95 × 268 × 100	95 × 418 × 100	95 × 588 × 100	95 × 738 × 100
Weight, kg	2 kg	3 kg	4,2 kg	5,3 kg
Color	Light gray (RAL 7035)			
Material	Aluminium			
Impact Protection	IK07			
Mounting	Mounting bracket			

Model	SP-LA50B	SP-LA60B	SP-LA80B	SP-LA100B
Electrical				
Rated power, W	50	60	80	100
Tappings 100 V line, W	50 / 25 / 12,5	60 / 30 / 15	80 / 40 / 20	100 / 50 / 25
Tappings 70 V line, W	25 / 12,5 / 6,25	30 / 15 / 7,5	40 / 20 / 10	50 / 25 / 12,5
Transformer impedance @ 100 V, Ω	200 / 400 / 800	167 / 333 / 667	125 / 250 / 500	100 / 200 / 400
Driver impedance, Ω	6	6	6	6
Effective frequency range, Hz	160 – 20000	160 – 20000	160 – 20000	160 – 20000
Sensitivity @ 4 m, 1 W, dB	78	77	76	75
SPL @ 4 m, Rated power, dB	94	94	94	94
SPL @ 1 m, 1 W, dB	90	89	88	87
SPL @ 1 m, Rated power, dB	106	106	106	106
Horizontal dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	360 / 200 / 165 / 125	360 / 200 / 165 / 125	360 / 200 / 165 / 125	360 / 200 / 165 / 125
Vertical dispersion at 500 Hz / 1 kHz / 2 kHz / 4 kHz, [°]	70 / 35 / 15 / 10	70 / 35 / 15 / 10	70 / 35 / 15 / 10	70 / 35 / 15 / 10
Environmental				
Environmental type	Type B			
IP rating	IP65			
Min. / max. ambient temperature	-25°C / 55°C			
Mechanical				
Dimensions, mm	95 × 888 × 100	95 × 888 × 100	95 × 888 × 100	95 × 888 × 100
Weight, kg	6 kg			
Color	Light gray (RAL 7035)			
Material	Aluminium			
Impact Protection	IK07			
Mounting	Mounting bracket			



SP-TNL100 Highly Directional Tunnel Loudspeaker

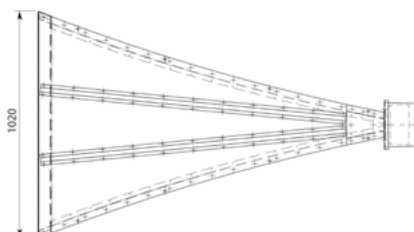
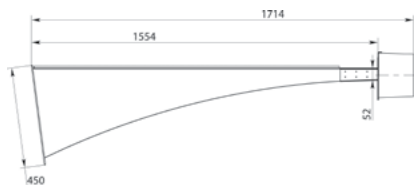
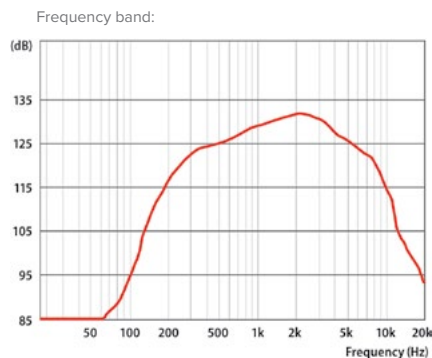
- ✓ Specially designed for tunnel applications.
- ✓ Highly directional asymmetric horn.
- ✓ Excellent speech intelligibility.
- ✓ Stainless steel construction.
- ✓ Waterproof housing IP66.
- ✓ High power output 100 / 50 W.



In case of an emergency, the Voice Evacuation System needs to guide people in the tunnel to safety so the audio transmission should be as clear as possible. In general, due to high levels of reverberation and noise, a tunnel is not an ideal environment for Voice Evacuation System and therefore speech intelligibility becomes a critical parameter for any voice alarm

application. To establish a sufficient level of speech intelligibility, a highly directional speakers system is required. By reducing the energy emitted to other surfaces, reflective sound energy can be minimized which results in a better direct to reverberant ratio. This will improve the maximum feasible speech intelligibility. To minimize disturbing echo effects, resulting in a loss of speech

intelligibility, each horn speaker is driven by an individual signal channel in a 100 V installation, which is equipped with audio DSP including EQ and delay. Our product S4T (Safety For Tunnel) offers the most effective solution which seamlessly combines a dedicated Voice Evacuation System with tailored Tunnel Loudspeakers.



SPECIFICATIONS

Model	SP-TNL100
Electrical	
Rated power, W	100
Tappings 100 V line, W	100 / 50
Transformer impedance, Ω 100 V	100 / 200
Driver impedance, Ω	6
Effective frequency range, Hz	250-8000
Sensitivity @ 4 m, 1 W, dB	99
SPL @ 4 m, Rated power, dB	119
SPL @ 1 m, 1 W, dB	111
SPL @ 1 m, Rated power, dB	131
Dispersion, horizontal x vertical, [°]	25 x 35
Environmental	
Environmental type	B
IP Rating	66
Min / Max Amb Temp	-25°C / 70°C
Mechanical	
Dimensions, mm	1770 x 1020 x 455
Net Weight, kg	32
Colour	Grey (RAL 7035)
Material	Stainless steel
Mounting	Anchor for concrete
Option	
For DC line monitoring	Capacitor
Colour optional	RAL Palette

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