

RoHS
compliant

Alarms & Sirens



SAS-2835



SAS(T)-2154



SAS-87



SAS-325A-6



SAS-RH/RL72



SAS-81

APPLICATIONS

Catalogue 2006

Piezoceramic audible components

TÜV
CERT

DIN EN ISO 9001:2000
Zertifikat: 01 100 010603

From crystals to sound

INTRODUCTION

Founded by Mr. Hugo Michiels in 1977, Sonitron have become the leading European manufacturer of piezoceramic audible components. Continuous research, intensive development and specialist know-how have resulted in a wide range of high quality and reliable products from the smallest and most cost effective buzzer to highly sophisticated alarms. This allows Sonitron to meet the needs of many applications, such as industrial, medical, consumer and military.

In 2005, Sonitron launched two new small piezoelectric alarms with high sound pressure, low weight and low current consumption: SAS-2835 and SAS(T)-2154.

These alarms reach a sound pressure level of >100dB(A) @1m using max. 120mA @12Vdc !

Sonitron's customers are offered full service through a worldwide sales network of distributors and representatives. Ongoing investment in the in-house disciplines, enables Sonitron to maintain their market reputation and being your first choice supplier of audible components and application support in acoustic technology. Our future activities will further be focused on research and development, on new applications and the expansion of our sales network.

We thank our customers and sales network throughout the world for the confidence shown in our company and products. They can be assured of our continuous efforts to generate "excellence in physical acoustics," creating an added value to your application.

SONITRON is ISO 9001:2000 certified by TÜV Rheinland.




Dr. Hugo R. Michiels
President
SONITRON N.V.



Family range Sonitron products

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COMPANY ORGANISATION

Sonitron manufactures their products in Belgium and sells them through an international network of distributors and representatives.

Our distributors and representatives give excellent sales and technical service.

They provide our customers with price quotations, samples, catalogues, technical assistance,...

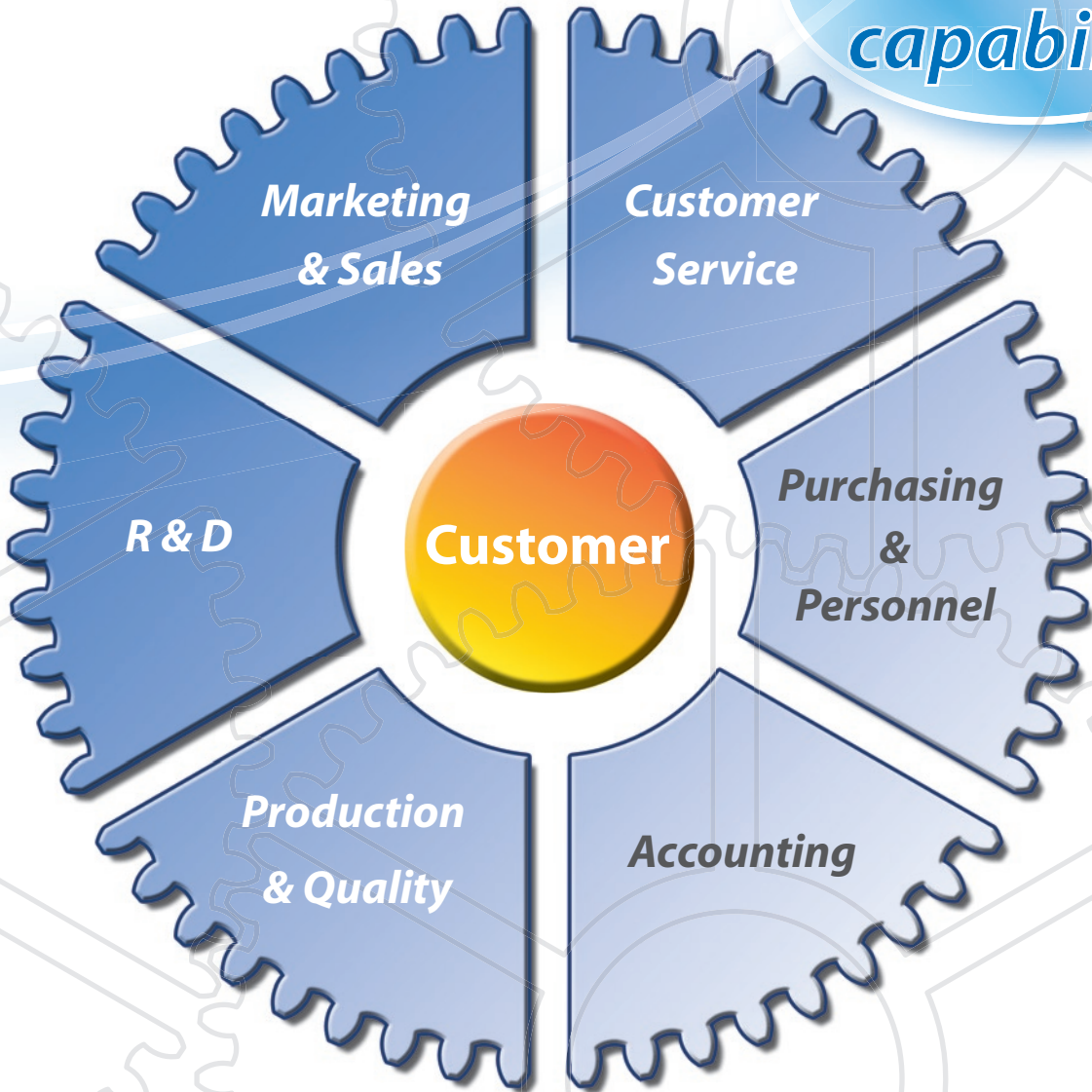
Please check the distributors and representatives list to look for your nearest contact person at <http://www.sonitron.be/index.cfm?pageID=2519>

However, if there is no distributor or representative in your country or should you require more detailed information, do not hesitate to contact our headquarter in Belgium.

Send your request to sales@sonitron.be or info@sonitron.be and we will be pleased to help you further !

Sonitron has the following departments to assist you...

**Total
in-house
capability**



MODELS ON REQUEST

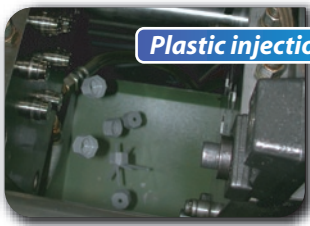
Continuous research, intensive development and specialist know-how have resulted in a wide range of high quality and reliable products, from the smallest and most cost effective buzzer to highly sophisticated alarms. This allows Sonitron to meet the needs of many different applications within the industrial, consumer, medical and military industry.

Ongoing investments in the in-house disciplines enables Sonitron to maintain their market reputation and being your first choice supplier of audible components and application support in acoustic technology.

Our future activities will be focused not only on research and development of new applications and products, but also on the development of buzzers or speakers for special customer requests. Our engineers will carefully study your application and give their support for the realisation of your audio-project with Sonitron products. Please send your request on sales@sonitron.be or info@sonitron.be. We will be pleased to help you further !

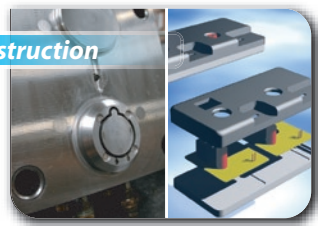


KNOW-HOW AND EQUIPMENT



Plastic injection

Sonitron studied the use of numerous plastic materials for buzzer housings, resulting in the use of the highest quality materials. Sonitron has a fully automated plastic injection department, which guarantees full of all the dimensions and acoustic properties of the housings of our products.



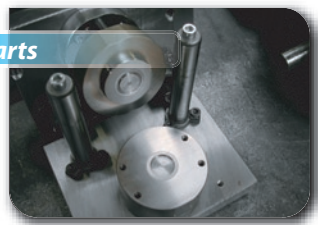
Mould development and construction

Sonitron develop and produce themselves the mouldings for the plastic housings and pin terminals used in their buzzers. This in-house knowledge and expertise in moulding technology enables Sonitron to manufacture customized products.



CNC milling machine

The fully automatic Milling Station with 5 axis is used to create new prototypes and plastic injection moulds. A continuous milling productivity is guaranteed due to the 16 load tool exchanger.



Pressing and cutting metal parts

Sonitron develop specially shaped and formed membranes for use in their products. These membranes are produced in-house, enabling to maintain the high quality in large quantities, required for mass production of membranes with specific resonant frequencies.



Pick & place machine

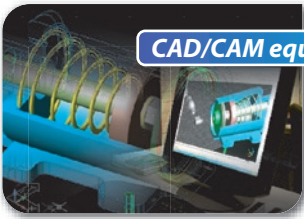
The electronic circuits produced and incorporated in Sonitron's acoustic components are designed in-house and are fully automatically realised with the latest surface mount and soldering equipment.



Automatic gluing

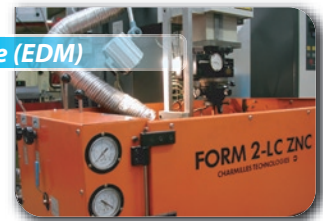
As the process of gluing the ceramic onto the membrane is of essential importance for the reproduction of the requested frequency, Sonitron developed special gluing equipment. This equipment enables full control of perfect adhesion between the piezo disc and the membrane.

KNOW-HOW AND EQUIPMENT



CAD/CAM equipment

The latest software programs and computing technologies are used for the in-house 3D-design of PC-boards, metal parts, moulds and automation equipment.



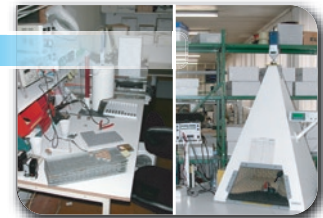
Electronic discharge machine (EDM)

The electronic discharge machine makes it possible to create very complex shapes. With this equipment, Sonitron is able to construct the moulds for special designs.



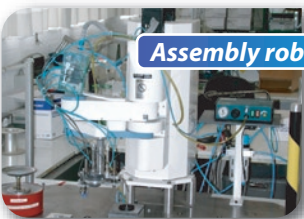
Test & measurement equipment

The anechoic room provides acoustic isolation from all background noises. The real time audio analyser can measure each type individually for frequency response, harmonic distortion and phase shift. All parameters such as dB(A), frequency, supply voltage are programmable. A printed copy of specific measurement reports is obtainable upon request.



Final quality control

Final testing of Sonitron's products is done in a special pyramid shaped sound absorption environment, avoiding reflection and standing wave patterns. This method guarantees very accurate SPL measurements.



Assembly robot

This multifunctional programmable assembling robot is ideal for automation of Sonitron's production.



Ultrasonic equipment

This equipment is used for ultrasonic gluing of plastic parts to obtain very strong watertight sealing.

APPLICATION FIELDS FOR ALARMS & SIRENS



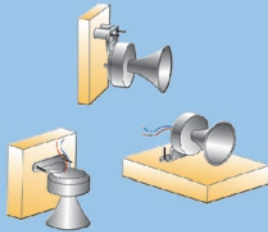
APPLICATION FIELDS

- ACCESS CONTROL
- ADVERTISING MESSAGE EQUIPMENT
- AGRICULTURAL EQUIPMENT
- AIRCRAFTS
- AMBULANCE SIREN
- ASSEMBLING EQUIPMENT
- AUTOMATIC DOORS
- AUTOMATIC GUIDED VEHICLES
- AUTOMATION EQUIPMENT
- AUTOMOBILES
- BAGGAGE CLAIM ALARM
- BOAT ENGINE ALARM
- BOATS
- BUS
- CAR-WASH
- CENTRAL HEATING CONTROL PANELS
- CLEANING MACHINES
- COCKPIT ALARM
- CONSTRUCTION MACHINES
- COOLING MACHINES
- DOOR ACCESS
- DOOR LOCK ALARM
- DOORBELL
- ELEVATORS
- EMBARKATION DEVICE
- EMERGENCY STOP
- EVENT ALARM
- FIRE ALARM
- FIRE DETECTORS
- FORKLIFT
- GAS DETECTORS
- GAS SENSOR
- GAS STATION
- GOLF CARTS
- HIGH PRESSURE CLEANERS
- HIGHWAY TOLL CARD SYSTEM
- HOISTING CRANE ALARM
- HOOTER FOR BLIND PEOPLE
- HOSPITAL MESSAGE SYSTEM
- INDUSTRIAL EQUIPMENT
- INDUSTRIAL WASHING MACHINES
- INSTRUMENTATION

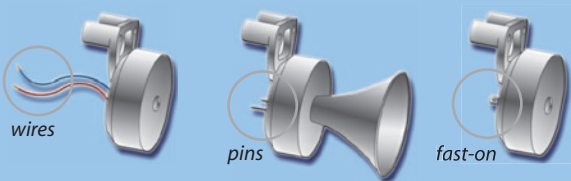
- METAL DETECTOR GATE
- METAL DETECTORS
- METRO DOORS
- MILITARY EQUIPMENT
- MILITARY VEHICLE
- MINING EQUIPMENT
- MONITORING & TEST EQUIPMENT
- MOTORCYCLES
- MOVING STAIRCASE
- MOWING-MACHINE
- NURSE CALL SYSTEM
- PASSENGER INFORMATION SYSTEM
- PETROL STATION
- PIPELINE MONITORING
- PROCESS CONTROL
- PUBLIC MESSAGE SYSTEMS
- PUBLIC TELEPHONES
- PUMP STATIONS
- PUMP STEERING
- RADAR CONTROL DEVICE
- RAILWAY DOOR SYSTEM
- RUNWAY LIGHTING
- SAFETY SYSTEMS
- SATELLITE SYSTEM
- SECURITY DEVICES
- SECURITY GATES (WALK THROUGH)
- SECURITY SYSTEMS
- SIGNAL EQUIPMENT
- PROCESS CONTROL EQUIPMENT
- SURVEYANCE EQUIPMENT
- TOWER WAGGON
- TRACTORS
- TRAFFIC EQUIPMENT
- TRAINS
- TRANSMISSION SYSTEMS
- TRANSPONDER
- TRUCKS
- UNDERGROUND
- UTILITY METERS
- VEHICLE ACCESS CONTROL
- VENDING-MACHINES
- WEATHER CONTROL STATION

KEY QUESTIONS FOR ALARM DETERMINATION

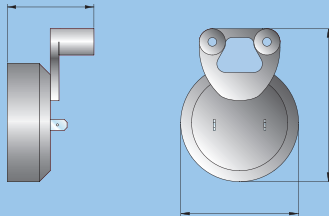
1. Mounting method:
e.g. Vertical, horizontal ?



2. Connection method: wires, pins, fast-on terminals ?



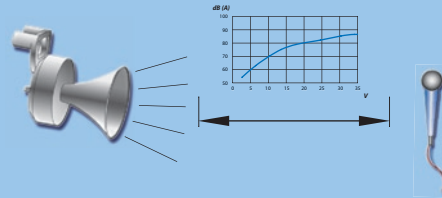
3. Maximum dimensions (in mm):
length, width, depth ?



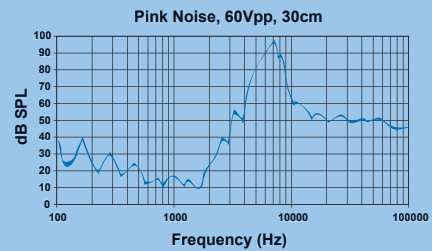
4. Supply voltage: 6, 12 or 24 Vdc ?



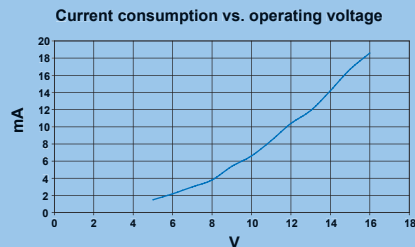
5. SPL – dB(A) @ 12Vdc,
@ 30 cm or 1 meter ?



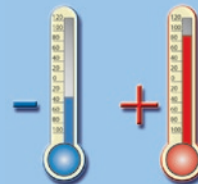
6. Operating frequency range ?



7. Current consumption in mA ?



8. Temperature range in °C ?



sonitron® PRODUCT SELECTION GUIDE

BUZZERS & TRANSDUCERS

STANDARD SERIES >



Dimensions overview
(in mm)

- Round $\phi \times H$
 $\phi 36.5 \times 26$
- Square $\nabla \times H$
 $\nabla 38 \times 26$

SMA-SERIES >



- SMA-13 $\nabla 14 \times 6.5$
- SMA-17 $\nabla 17.5 \times 8.5$
- SMA-21 $\nabla 21 \times 9.5$
- SMA-24 $\nabla 24 \times 15.5$
- SMA-30 $\nabla 30 \times 10.5$

SMAT-SERIES >



- SMAT-13 $\nabla 14 \times 6.5$
- SMAT-17 $\nabla 17.5 \times 8.5$
- SMAT-21 $\nabla 21 \times 9.5$
- SMAT-24 $\nabla 24 \times 15.5$
- SMAT-30 $\nabla 30 \times 10.5$

SMB-SERIES >



- SMB-17 $\nabla 18.6 \times 9.7$
- SMB-32 $\nabla 33.5 \times 9.7$

SMAC-SERIES >



- SMAC-25 $\phi 26.5 \times 18$

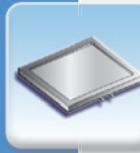
For more information!

See BUZZERS & TRANSDUCERS Catalogue

PIEZOCERAMIC SPEAKERS

SPS-SERIES >

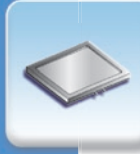
SPS-10080



Dimensions overview
(in mm)

$\nabla \times H$
100x80x6.8

SPS-8770



87x70x6.8

SPS-4640



47x41x5.25

SPS-3035



32x36x0.2

SPS-27



$\phi 27 \times 4.15$

SCS-SERIES >



- SCS-17 $\nabla 18.6 \times 9.7$
- SCS-24 $\nabla 25 \times 9.7$
- SCS-32 $\nabla 33.5 \times 9.7$

SPECIALS >

Underwater speaker



87x70x11

For more information!

See PIEZO SPEAKER Catalogue

ALARMS & SIRENS

SAS-SERIES >

SAS-2835



Dimensions overview
(in mm)

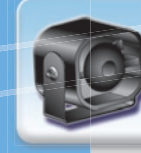
$\phi \times H$
 $\phi 56 \times 63$

SAS(T)-2154



$\phi 54 \times 19.6$

SAS-325A-6



108x85x69

SAS-87



$\phi 110 \times 45$

SAS-RL72



47x39x23

SAS-RH72



47x39x23

SAS-81



75x70x51

RoHS (RESTRICTION OF HAZARDOUS SUBSTANCES)

I herewith declare that as from october 1, 2005, all of our products are in compliance with the new directive 2002/95/EC (restricting hazardous materials).


We confirm that none of our buzzers (SMA, SMAT, SMAC, panel/standard series), speakers (SCS and SPS series) or alarms (SAS series) contain any of the following substances:

- mercury (Hg)
- cadmium (Cd)
- hexavalent chromium (Cr (VI))
- polybrominated biphenyls (PBB)
- polybrominated diphenyl ethers (PBDE)
- lead



Sonitron N.V. cannot be held responsible for any deviations in raw materials or components used in their products.

Additional information or reports can be supplied after written and motivated request, provided it does not concern classified unreleased production information and subject to cost calculation when information is requested from third parties.



Dr. Hugo Michiels
President
SONITRON N.V.

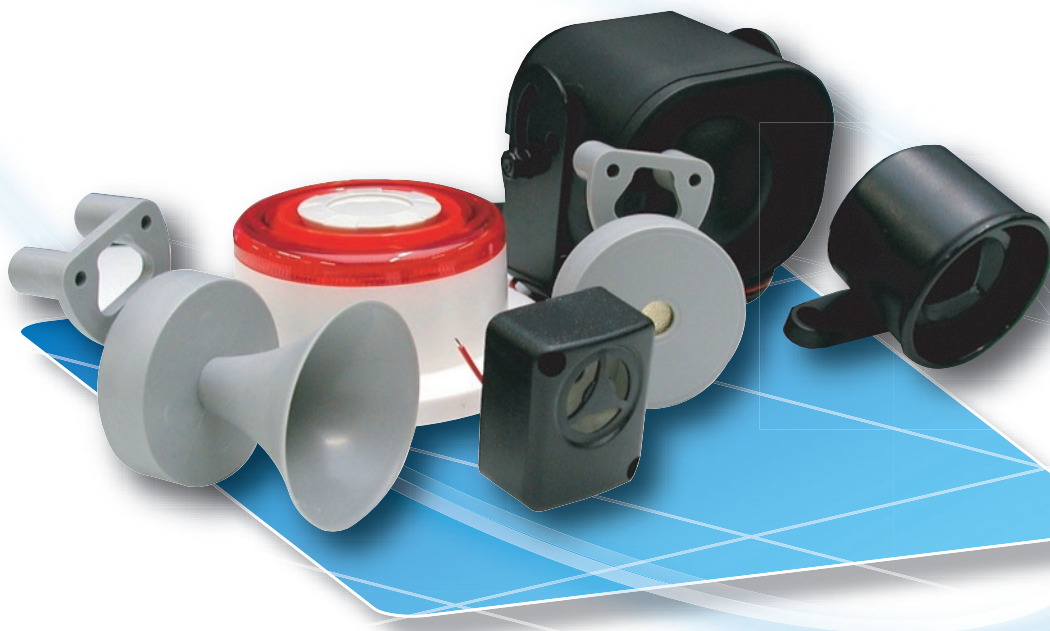
ALARM SIRENS (SAS)

INTRODUCTION

The Sonitron SAS-series exists of loud, small and low weight piezoceramic and electromagnetic models.

The different models are developed for use in applications where dimensions should be small and sound output loud, such as fire alarms, ambulance sirens, security devices etc.

The electromagnetic alarm SAS-325A-6 can be programmed to six different tones. This model has a very high sound output up to 123 dB(A), also for lower frequencies, and is easily mountable with the universal mounting bracket.



Family range alarms

GENERAL OVERVIEW SAS-SERIES

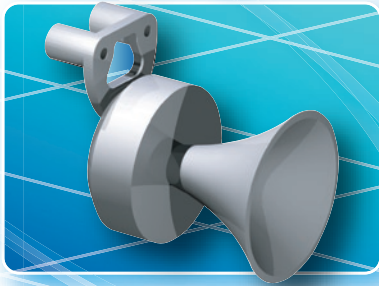
Model	Function	Operating voltage		Frequency (Hz) (±30%)	Operating current (mA)	Sound pressure level* (dB(A))	Weight (g)
		min Vdc	max Vdc				
SAS-2835-12V	sweep	6	15	1800-3500	120	110	67
SAS-2154-S	sweep	6	15	2000-3500	100	105	35
SAS-2154-W	warbler	6	15	3000-3500	110	105	35
SAST-2154-S	sweep	6	15	2000-3500	100	105	35
SAST-2154-W	warbler	6	15	3000-3500	110	105	35
SAS-87-12V	sweep	6	14	1500-3500	250	122	128
SAS-87-24V	sweep	6	28	1500-3500	160	122	128
SAS-87-12V-IS	sweep	6	14	1500-3500	250	122	128
SAS-325A-6**	6 ≠ tones	12	12	400-2800	1000	123	334
SAS-81-12V	sweep	6	14	1500-3500	130	115	60
SAS-81-24V	sweep	6	14	1500-3500	65	115	60
SAS-RL72-12V	intermittent	6	14	400	20	90	24
SAS-RH72-12V	intermittent	6	14	2700	10	100	28

* All measurements are made in free air @12Vdc @30cm.

** Electromagnetic alarm



SAS-2835 PIEZO HORN SIREN



The SAS-2835 is a small piezoelectric siren with high sound pressure, low weight and low current consumption. The sound output is 110dB, a very clear and aggressive warning. There are many applications for this siren: all fire alarms, cars and motor vehicles, automation equipment, security devices, etc. The vibrating elements are unique and developed at Sonitron (worldwide patented). This series made of high quality materials, offers extreme reliability and robustness, and features a life time over 2000 hours in continuous use.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Loud siren output with high sound pressure level
- Dust tight, waterproof (IP67)
- Low current consumption
- No magnetic field

APPLICATIONS :

- Trucks & automobiles
- Fire alarm
- Burglar alarm
- House alarm

SPECIFICATIONS

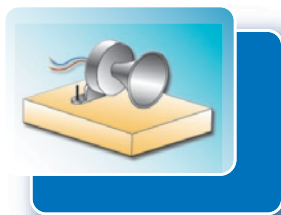
Model	Function	Sound pressure level* (dB(A)(±2dB(A))	Frequency (Hz)(±30%)	Operating voltage (Vdc)	Operating current(mA)
SAS-2835	Sweep	110	1800 to 3500**	6-15	120

* All measurements are made in free air @12Vdc @1 meter @21°C @35% RH.

** Interval frequency is 3Hz (± 2Hz).

Operating temperature:	-40°C to +60°C
Storage temperature:	-40°C to +60°C
Expected life time:	2000 hours continuous working @12Vdc @21°C @35% RH
Color:	grey, black, red, ivory
Terminals:	pins, fast-on and wire connection
Case material:	ABS plastic (UL rating: 94HB)
Weight:	36g
Mounting method:	Mounting on panels and walls with universal bracket

**110 dB(A)
@ 1 meter**

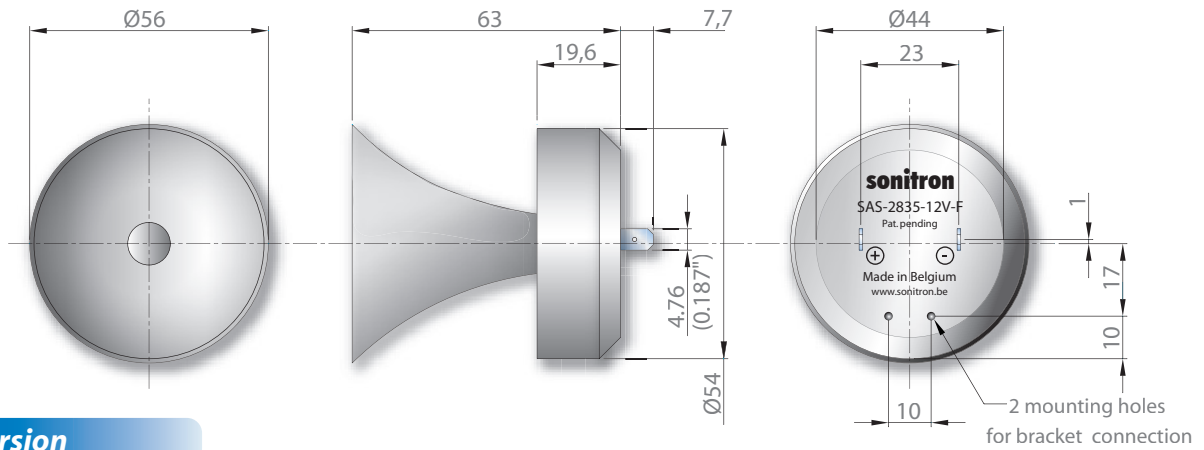


DIMENSIONS (all dimensions are in mm)

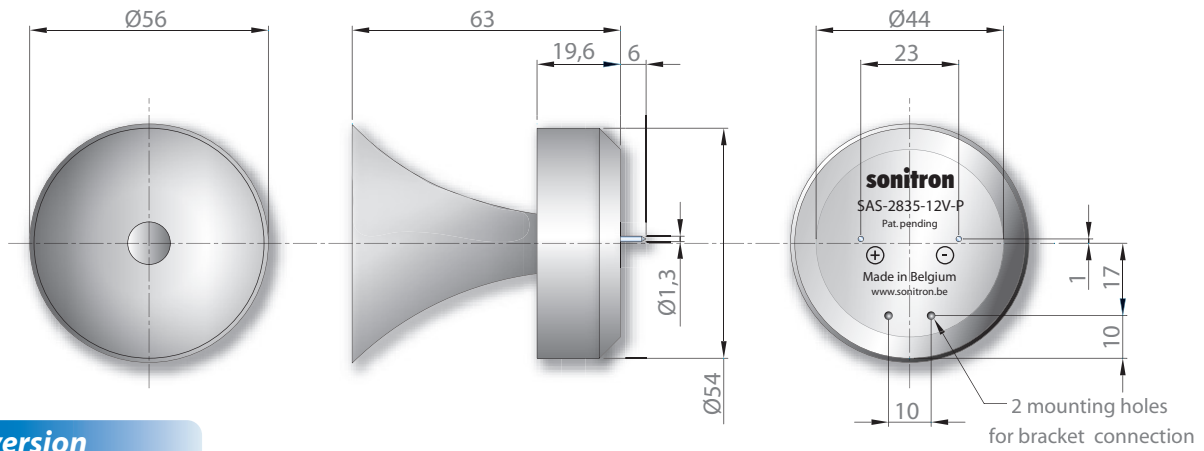


Dimensions of Piezo Horn Siren without mounting bracket

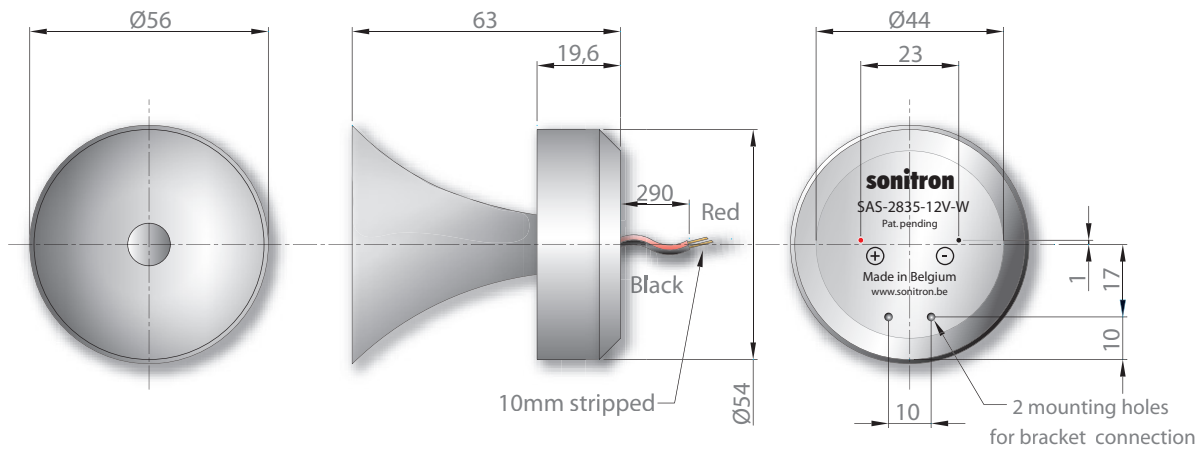
Fast-on version



Pin version



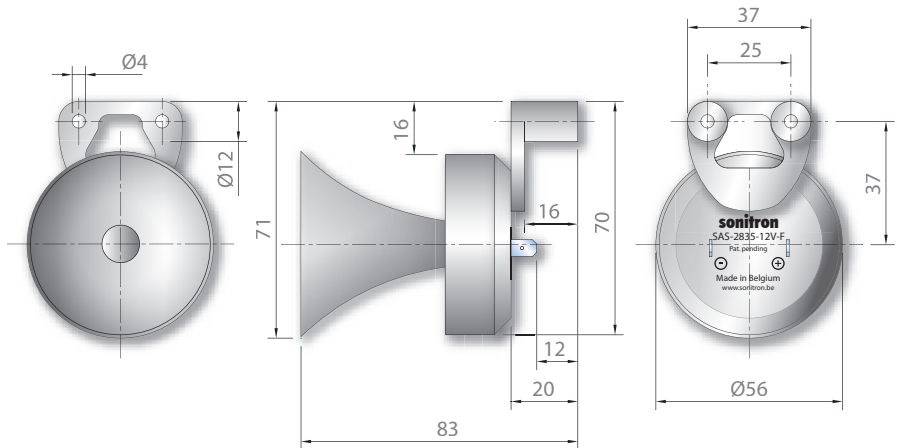
Wire version



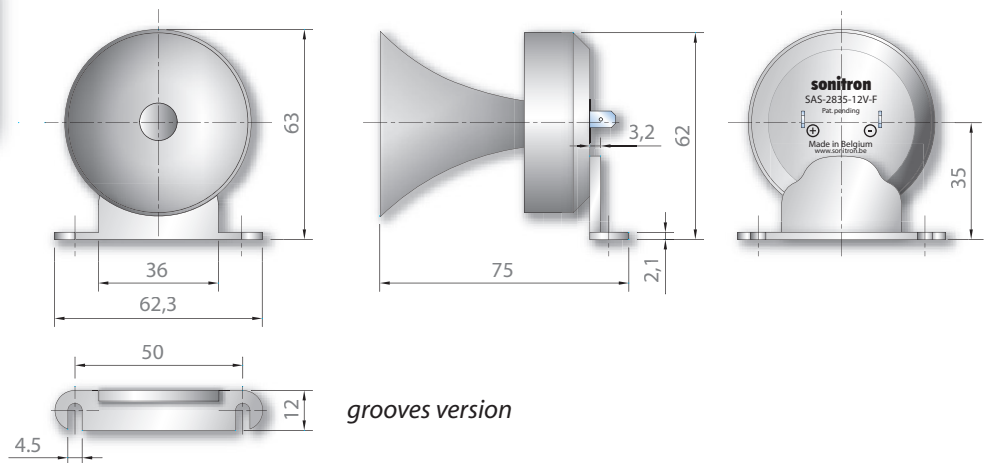
Tolerance: +/- 0.2mm

DIMENSIONS (all dimensions are in mm)

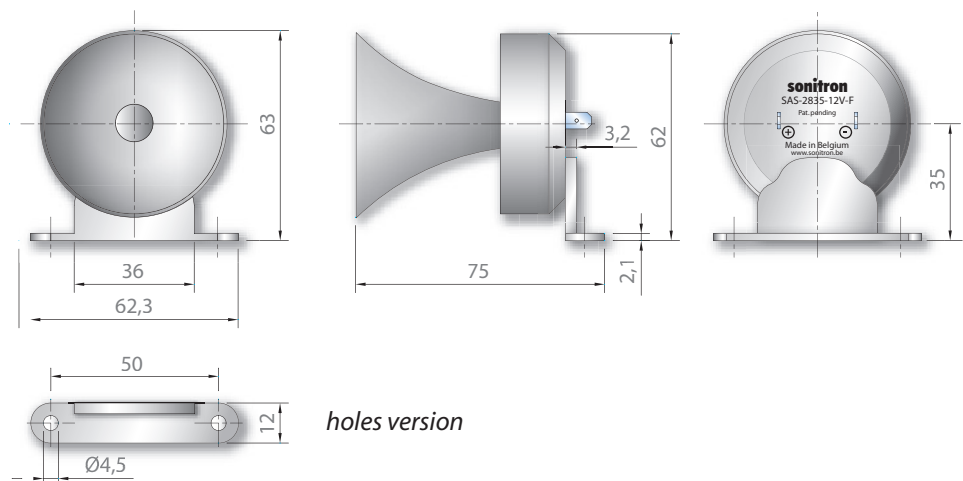
1. Dimensions of Piezo Horn Siren with mounting bracket (MB1)



2. Dimensions of Piezo Horn Siren with mounting bracket (MB2)



3. Dimensions of Piezo Horn Siren with mounting bracket (MB3)

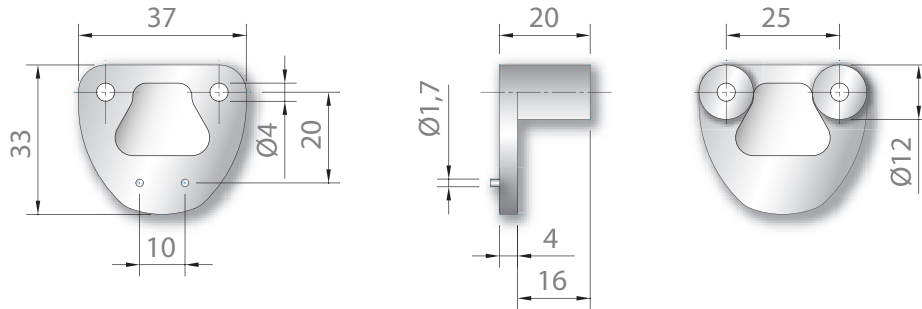


Tolerance: +/- 0.2mm

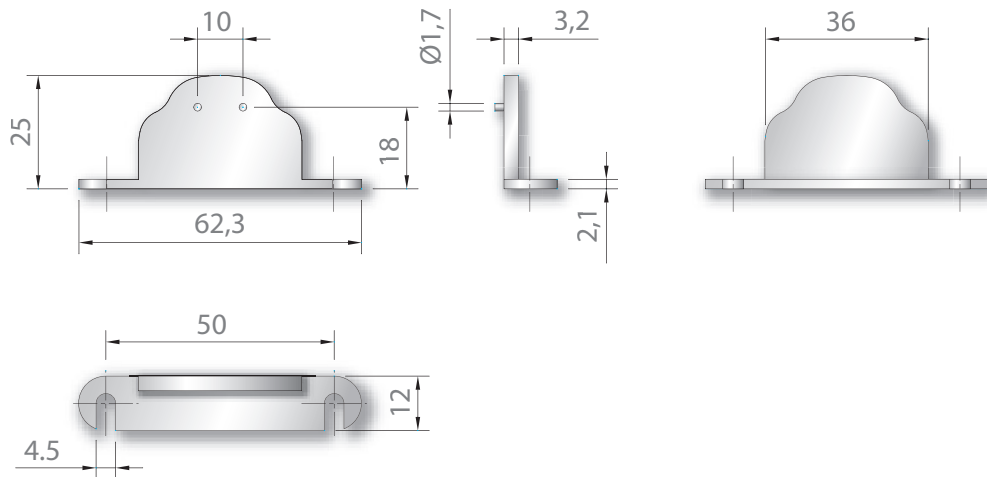
DIMENSIONS (all dimensions are in mm)

Dimensions of mounting brackets

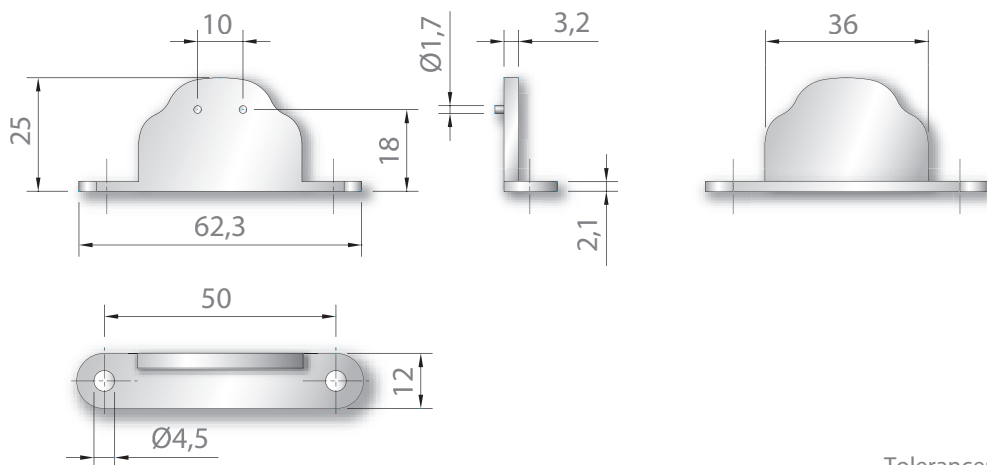
1. Mounting bracket for wall connection (MB1)



2. Mounting bracket for flat connection with grooves (MB2)

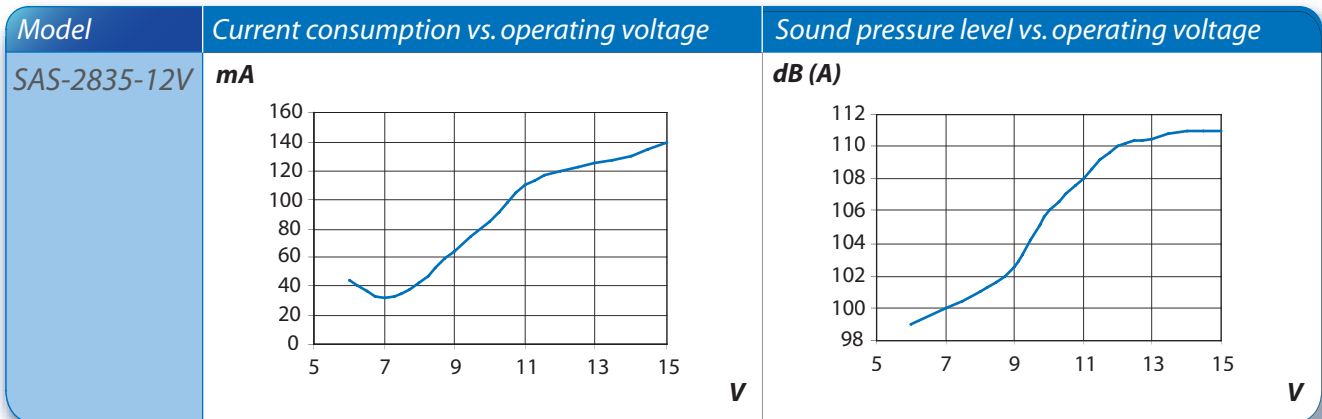


3. Mounting bracket for flat connection with holes (MB3)



Tolerance: +/- 0.2mm

ELECTRICAL PARAMETERS



Note : All measurements are made in free air @1 meter @21°C @35% RH. For measurement purposes, the alarm was mounted with mounting bracket "MB1" on a wooden panel.

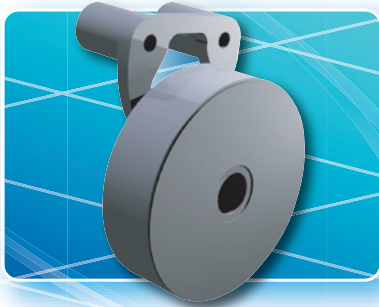
PRODUCT CODIFICATION

SAS-2835	-12V-	- W P F	MB	1 2 3	S
Sonitron Alarm Series	Supply Voltage	W: wire AWG 24 P: round pin F: fast-on terminal 4.76mm	Mounting Bracket	1: wall connection 2: flat connection (with grooves) 3: flat connection (with holes)	Separate mounting bracket

LIST OF AVAILABLE PRODUCT TYPES

SAS-2835-12V-F-MB1	SAS-2835-12V-P-MB1	SAS-2835-12V-W-MB1
SAS-2835-12V-F-MB2	SAS-2835-12V-P-MB2	SAS-2835-12V-W-MB2
SAS-2835-12V-F-MB3	SAS-2835-12V-P-MB3	SAS-2835-12V-W-MB3
SAS-2835-12V-F-MB1S	SAS-2835-12V-P-MB1S	SAS-2835-12V-W-MB1S
SAS-2835-12V-F-MB2S	SAS-2835-12V-P-MB2S	SAS-2835-12V-W-MB2S
SAS-2835-12V-F-MB3S	SAS-2835-12V-P-MB3S	SAS-2835-12V-W-MB3S

SAS-2154 PIEZO SOUNDER



The SAS-2154 is a thin piezo electric siren with high sound pressure, low weight and low current consumption. The sound output is a powerful, clear and aggressive warning signal. There are many applications for this siren: all fire alarms, cars and motor vehicles, automation equipment, security devices, etc. The vibrating elements are unique and developed at Sonitron (worldwide patented). This series is made from high quality materials, offers extreme reliability and robustness, and features life time over 2000 hours in continuous use.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Loud siren output with high sound pressure level
- Dust tight, waterproof (IP67)
- Low current consumption
- No magnetic field

APPLICATIONS :

- Car alarm
- Fire alarm
- Motor alarm
- Home security alarm

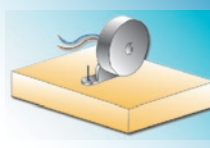
SPECIFICATIONS

Model	Function	Sound pressure level* (dB(A)(±2dB(A))	Frequency (Hz)(±30%)	Operating voltage (Vdc)	Operating current*** (mA)
SAS-2154-S	Sweep	105	2000 to 3500**	6-15	100
SAS-2154-W	Warbler	105	3000 and 3500**	6-15	110

* Wideband power level, measured @15Vdc (S-version) or 10Vdc (W-version) @1 meter @21°C @35% RH.
 ** Interval frequency is 3Hz (± 2Hz).
 *** Operating current @12Vdc

Operating temperature:	-40°C to +60°C
Storage temperature:	-40°C to +60°C
Expected life time:	2000 hours continuous working @12Vdc @21°C @35% RH
Color:	grey, black, red, ivory
Terminals:	pins, fast-on and wire connection
Case material:	ABS plastic (UL rating: 94HB)
Weight:	35g
Mounting method:	Mounting on panels and walls with universal bracket

**105 dB(A)
@ 1 meter**

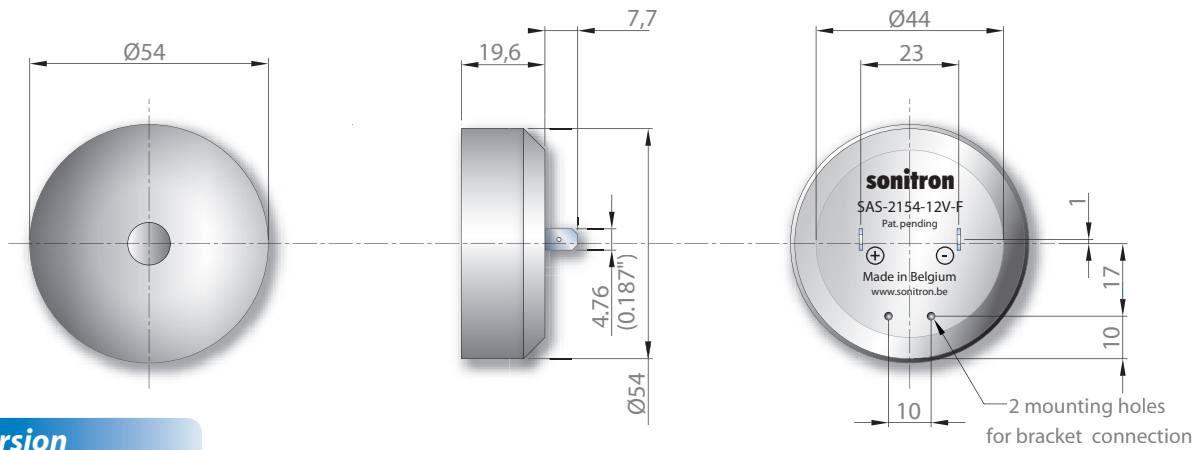


DIMENSIONS (all dimensions are in mm)

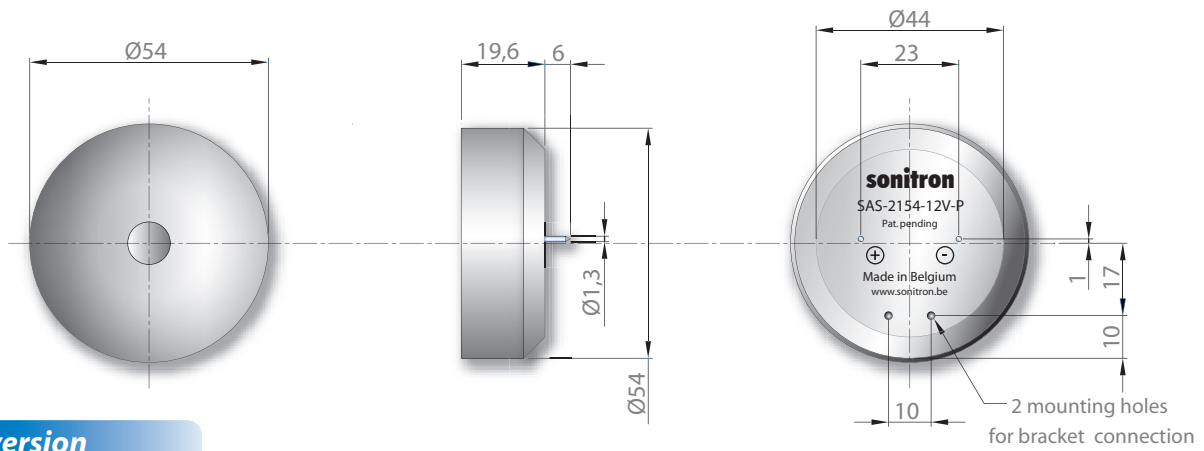


Dimensions of Piezo sounder without mounting bracket

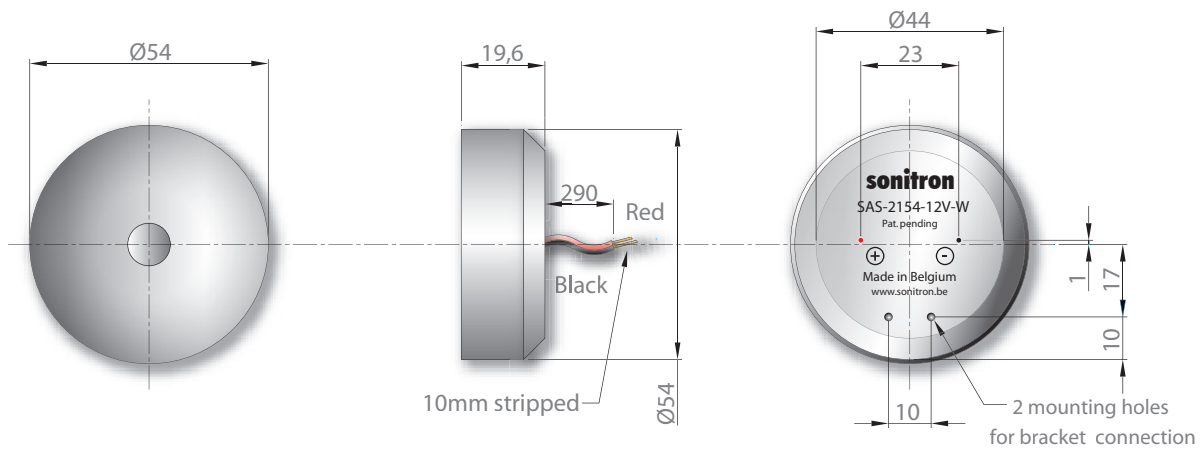
Fast-on version



Pin version



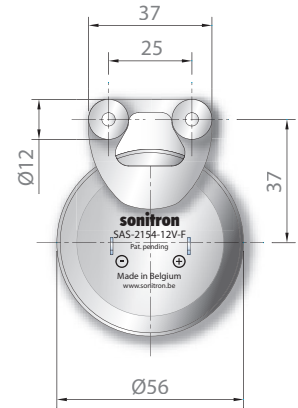
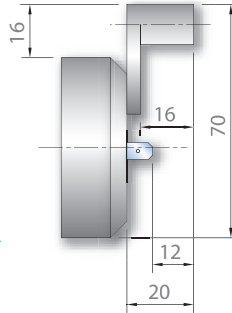
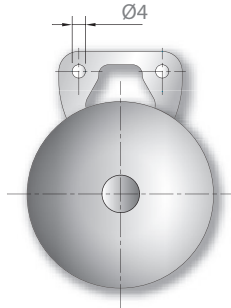
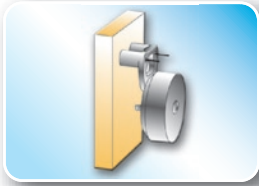
Wire version



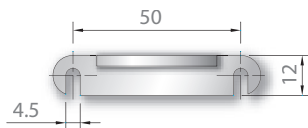
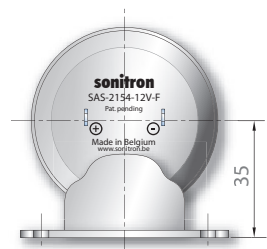
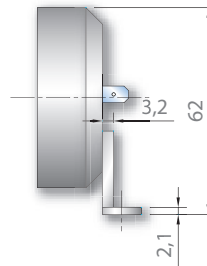
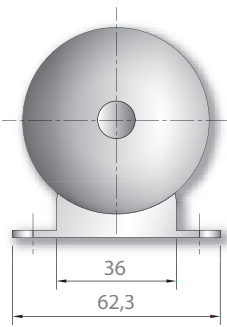
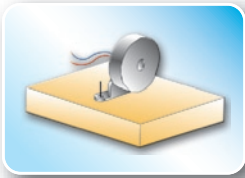
Tolerance: +/- 0.2mm

DIMENSIONS (all dimensions are in mm)

1. Dimensions of Piezo Sounder with mounting bracket (MB1)

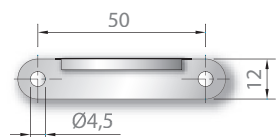
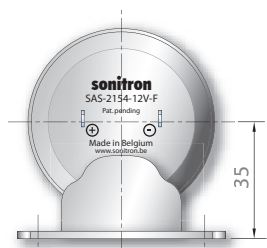
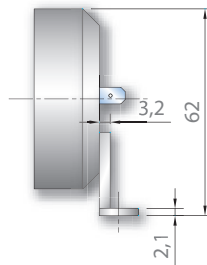
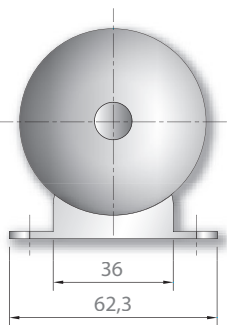


2. Dimensions of Piezo Sounder with mounting bracket (MB2)



grooves version

3. Dimensions of Piezo Sounder with mounting bracket (MB3)



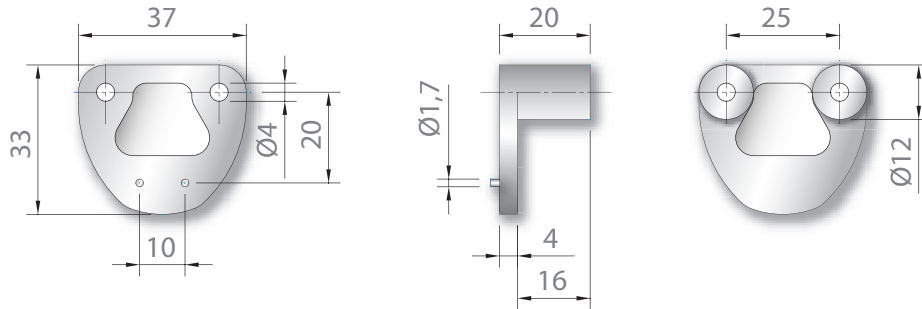
holes version

Tolerance: +/- 0.2mm

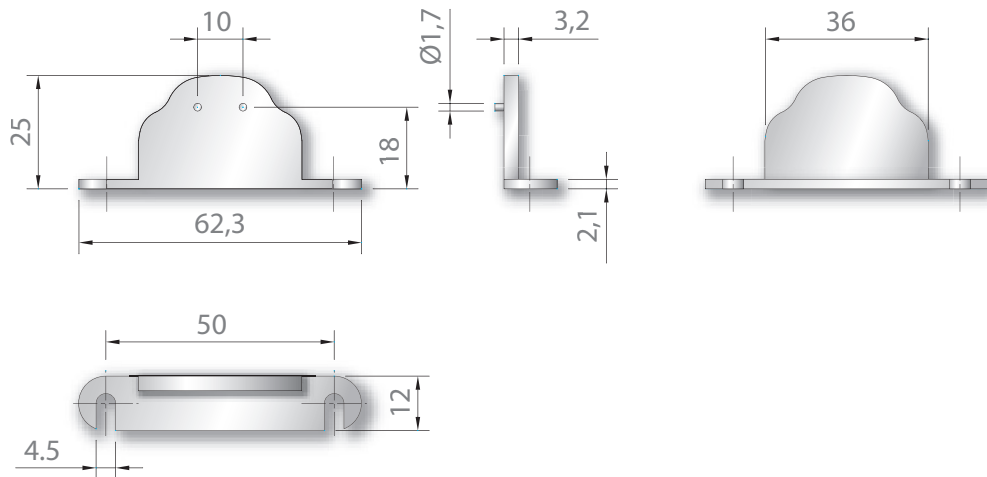
DIMENSIONS (all dimensions are in mm)

Dimensions of mounting brackets

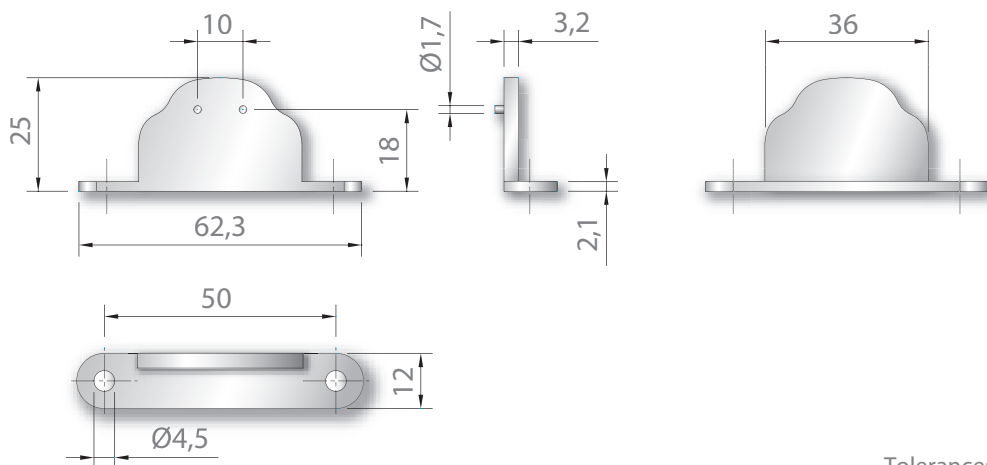
1. Mounting bracket for wall connection (MB1)



2. Mounting bracket for flat connection with grooves (MB2)

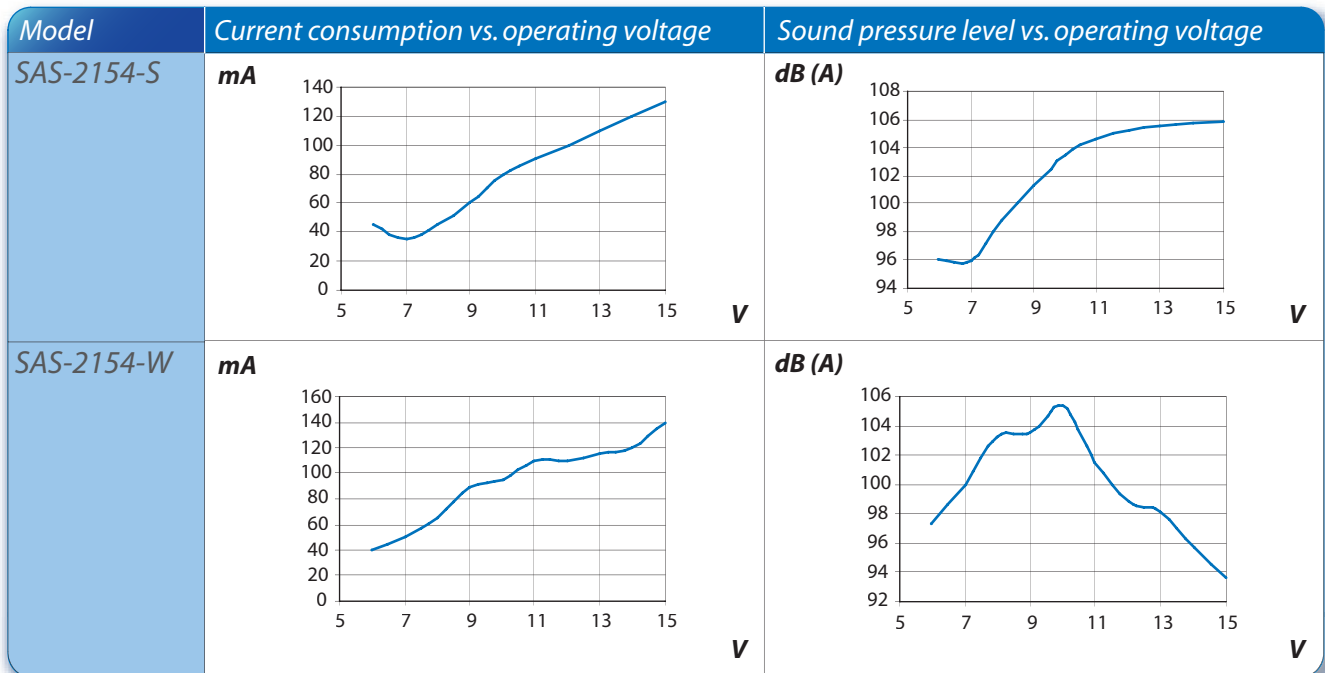


3. Mounting bracket for flat connection with holes (MB3)



Tolerance: +/- 0.2mm

ELECTRICAL PARAMETERS



Note : All measurements are made in free air @1 meter @21°C @35% RH. For measurement purposes, the alarm was mounted with mounting bracket "MB1" on a wooden panel.

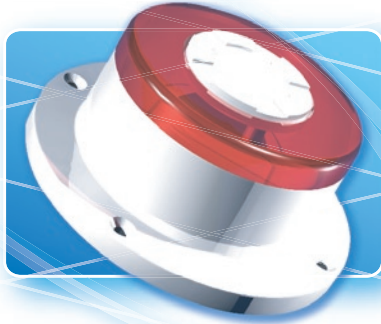
PRODUCT CODIFICATION

SAS Sonitron Alarm Series	T -2154 Transducer (without electronics)	S W S: sweep W: warbler	W P F W: wire AWG 24 (12cm) P: round pin F: fast-on terminal 4.76mm	MB Mounting Bracket	1 2 3 1: wall connection 2: flat connection (with grooves) 3: flat connection (with holes)	S Separate mounting bracket
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LIST OF AVAILABLE PRODUCT TYPES

SAS-2154-S-F-MB1 SAS-2154-S-F-MB2 SAS-2154-S-F-MB3	SAS-2154-S-P-MB1 SAS-2154-S-P-MB2 SAS-2154-S-P-MB3	SAS-2154-S-W-MB1 SAS-2154-S-W-MB2 SAS-2154-S-W-MB3
SAS-2154-S-F-MB1S SAS-2154-S-F-MB2S SAS-2154-S-F-MB3S	SAS-2154-S-P-MB1S SAS-2154-S-P-MB2S SAS-2154-S-P-MB3S	SAS-2154-S-W-MB1S SAS-2154-S-W-MB2S SAS-2154-S-W-MB3S
SAS-2154-W-F-MB1 SAS-2154-W-F-MB2 SAS-2154-W-F-MB3	SAS-2154-W-P-MB1 SAS-2154-W-P-MB2 SAS-2154-W-P-MB3	SAS-2154-W-W-MB1 SAS-2154-W-W-MB2 SAS-2154-W-W-MB3
SAS-2154-W-F-MB1S SAS-2154-W-F-MB2S SAS-2154-W-F-MB3S	SAS-2154-W-P-MB1S SAS-2154-W-P-MB2S SAS-2154-W-P-MB3S	SAS-2154-W-W-MB1S SAS-2154-W-W-MB2S SAS-2154-W-W-MB3S
SAST-2154-F-MB1 SAST-2154-F-MB2 SAST-2154-F-MB3	SAST-2154-P-MB1 SAST-2154-P-MB2 SAST-2154-P-MB3	SAST-2154-W-MB1 SAST-2154-W-MB2 SAST-2154-W-MB3
SAST-2154-F-MB1S SAST-2154-F-MB2S SAST-2154-F-MB3S	SAST-2154-P-MB1S SAST-2154-P-MB2S SAST-2154-P-MB3S	SAST-2154-W-MB1S SAST-2154-W-MB2S SAST-2154-W-MB3S

SAS-87 HORN SIREN



This ceiling mountable piezoceramic siren is used for very loud immediate attention-getting functions. The sound output level reaches 122 dB(A). Combined with a visual eye-catching flashlight, the siren gets immediate attention. This siren is especially suited for use in applications such as fire alarms, automation equipment, security devices, emergency warnings and as safe guards. The SAS-87 is available in 2 versions: 12Vdc and 24Vdc.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Audiovisual alarm: eye-catching flashlight
- Loud siren output with solid-state flash light and high sound pressure
- Ceiling mounting type; disk mounting bracket
- Dust tight and waterproof (IP65)

APPLICATIONS :

- Smoke alarms
- Fire alarms
- Car/burglar alarms
- Mining alarm (explosion proof)

SPECIFICATIONS

Operating voltage:	SAS-87-12V: 6-14Vdc SAS-87-24V: 16-28Vdc
Operating current: (with reverse polarity protection)	SAS-87-12V: 250mA SAS-87-24V: 160mA
Operation frequency:	1.5-3.5kHz (±30%)
Alarm tones:	frequency sweep during 1 second
Sound output:	122dB(A) (±dB(A) @30cm
Flash light flux:	20 candle
Color:	Ivory (or black if order quantity > 2000 pcs)
Power cord:	length of 30cm (±3 cm; AWG24)
Case material:	ABS plastic
Weight:	128g/pc 1pc/box; 50 pcs/inner box; 100 pcs/box Net weight/Gross weight/Measurement: 18kg/19kg/0.10m3

**122 dB(A)
@ 30cm**

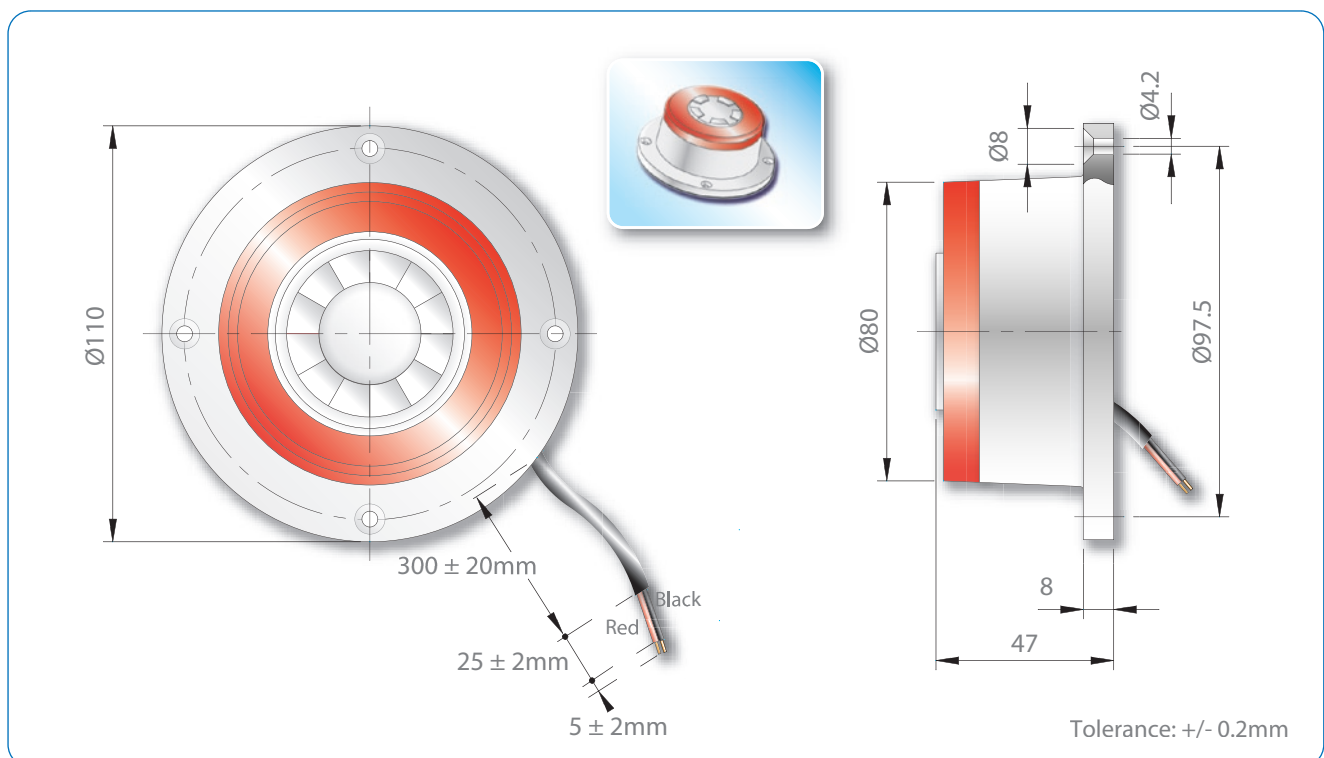


ELECTRICAL PARAMETERS

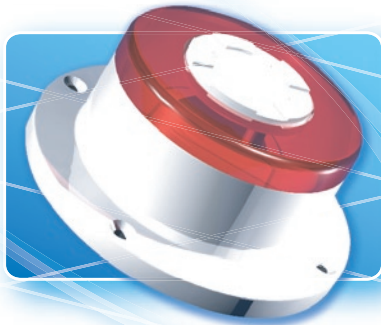
Models	Current consumption vs. operating voltage	Sound pressure level vs. operating voltage
SAS-87-12V		
SAS-87-24V		

Note : All measurements are made in free air @1 meter @21°C @35% RH.

DIMENSIONS (all dimensions are in mm)



SAS-87-12V-IS INTRINSICALLY SAFE ALARM



This ceiling mountable piezoceramic siren is used for very loud immediate attention-getting functions in explosion dangerous environments.

The sound output level reaches about 122 dB(A). Combined with a visual eye-catching flashlight, the siren gets immediate attention. This siren is especially suitable for use in applications such as smoke and fire alarms, automation equipment, security devices, emergency warnings and as safe guards. The SAS-87 is available in 2 versions: 12Vdc and 24Vdc.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Audiovisual alarm: eye-catching flashlight
- Loud siren output with solid-state flash light and high sound pressure
- Ceiling mounting type; disk mounting bracket
- Dust tight and waterproof (IP65)
- Intrinsically safe (EEx ia I) IM 1 cert. ISSeP03ATEX099U

APPLICATIONS :

- Smoke alarms
- Fire alarms
- Car/burglar alarms
- Mining alarm (intrinsically safe)

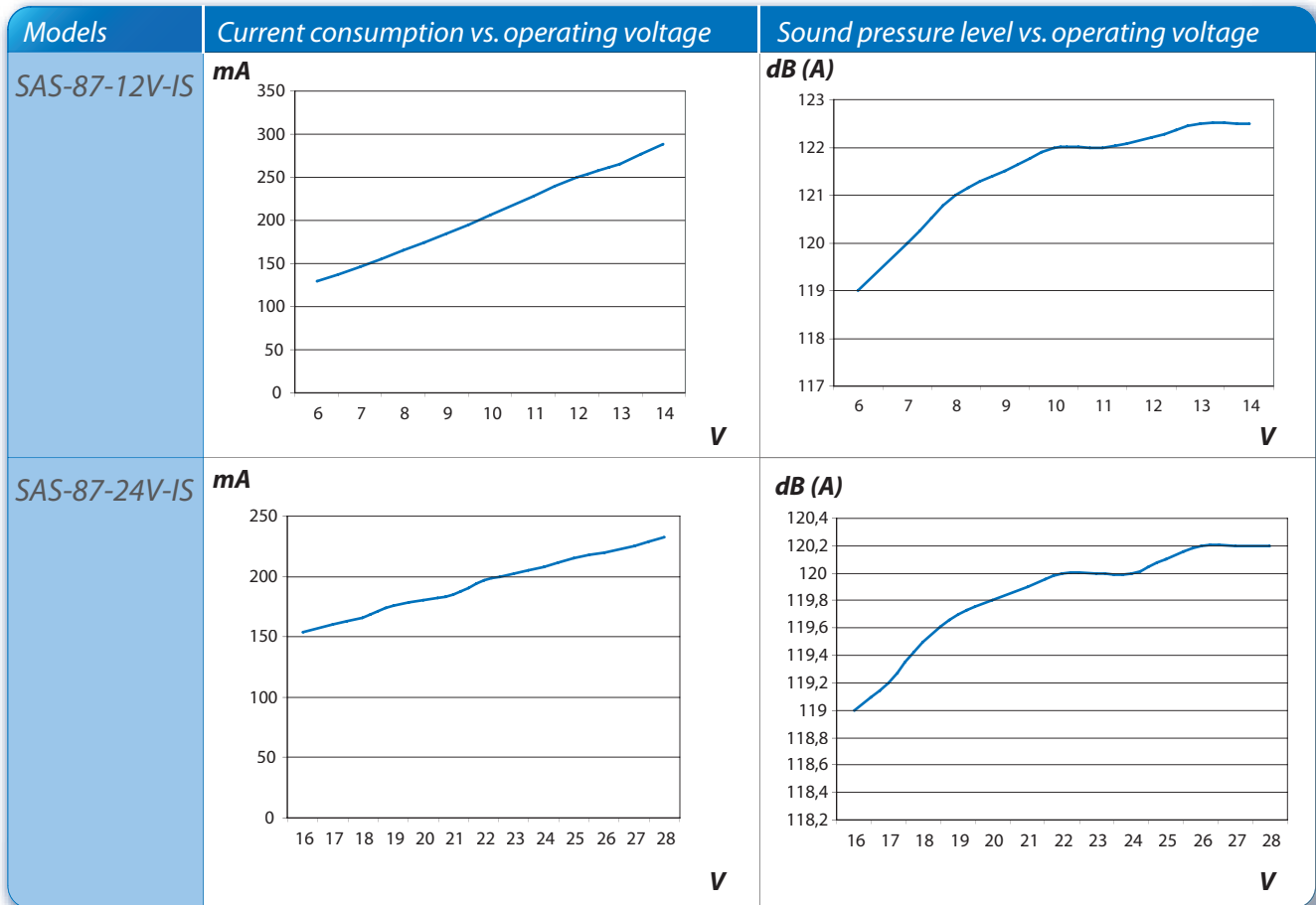
SPECIFICATIONS

Operating voltage:	SAS-87-12V-IS: 6-14Vdc SAS-87-24V-IS: 16-28Vdc
Operating current: (with reverse polarity protection)	SAS-87-12V-IS: 250mA SAS-87-24V-IS: 160mA
Operation frequency:	1.5-3.5kHz (±30%)
Alarm tones:	frequency sweep during 1 second
Sound output:	122dB(A) (±dB(A) @30cm
Flash light flux:	20 candle
Color:	Ivory (or black if order quantity > 2000 pcs)
Power cord:	length of 30cm (±3 cm; AWG24)
Case material:	ABS plastic
Weight:	128g/pc 1pc/box; 50 pcs/inner box; 100 pcs/box Net weight/Gross weight/Measurement: 18kg/19kg/0.10m3

**122 dB(A)
@ 30cm**

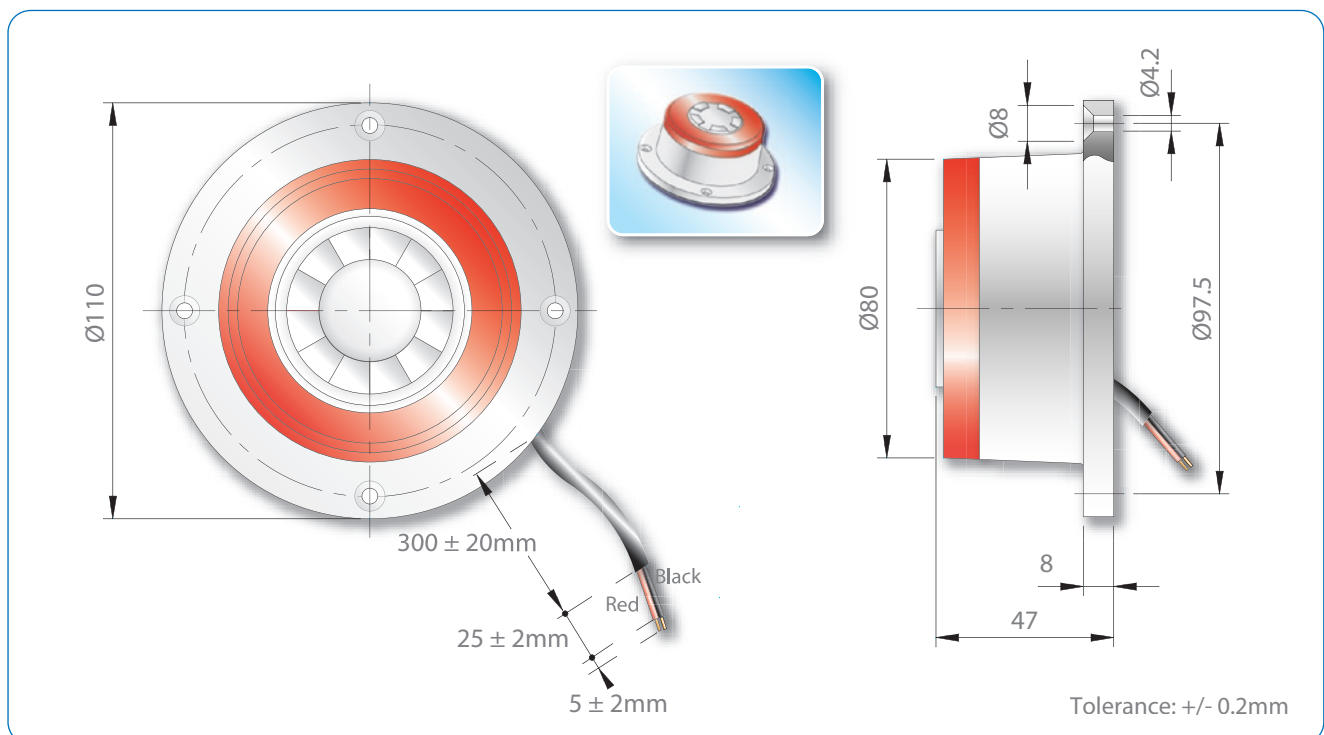


ELECTRICAL PARAMETERS

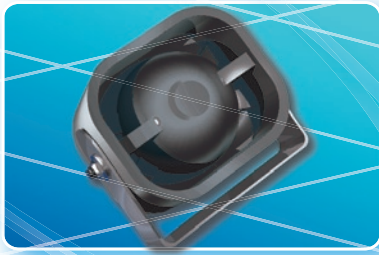


Note: All measurements are made in free air @1 meter @21 °C @35% RH. For measurement purposes, the alarm was mounted with screws on a wooden panel.

DIMENSIONS (all dimensions are in mm)



SAS-325A-6 MULTI TONE SIREN



The SAS-325A-6 is a universal electromagnetic siren with very high sound output. At 30cm the sound pressure level is about 123 dB(A). Six different alarm tones can be programmed by jumpers selection, which enables the user to choose and pre-select an alarm function for different application fields.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Selectable alarm tones
- Siren with low frequency high sound pressure
- Universal mounting metal bracket included
- Dust tight (IP60)

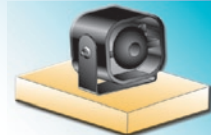
APPLICATIONS :

- Outdoor & indoor warning system
- Evacuation alarm

SPECIFICATIONS

Operating voltage:	12 version
Operating current:	12 version: 1A
Operating frequency:	depends on the tone you choose (6 tones available): Tone 1: Slow decreasing sweep: from 1500Hz down to 700Hz Tone 2: Red alert: sound composition 1800– 2800Hz Tone 3: Rising sweep (low to high tone): from 400Hz up to 900Hz Tone 4: Police siren: Alternating between 1000Hz and 1700Hz Tone 5: Fast low frequency sweep: from 1200Hz down to 700Hz Tone 6: Fast high frequency sweep: from 1200Hz up to 2700Hz Possibility to choose more than one tone in a sequence by inserting several jumpers at the back of the model or by selective electronic switching (optional on demand).
Alarm tones:	siren; 6 serial tones can be pre-selected with jumpers.
Sound output:	123dB(A) (±3dB(A) @30cm
Color:	black (or ivory if order quantity > 1000pcs)
Power cord:	length of 30cm (±3cm); AWG22
Case material:	ABS plastic
Weight:	334g 1pc/box; 30 pcs/inner box; 30 pcs/box Net weight/Gross weight/Measurement: 16.2kg/17kg/0.047m ³

**123 dB(A)
@ 30cm**



ELECTRICAL PARAMETERS

Model	Current consumption vs. operating voltage	Sound pressure level vs. operating voltage
SAS-325A-6	<p>mA</p>	<p>dB (A)</p>

Note : All measurements are made in free air @1 meter @21°C @35% RH.

DIMENSIONS (all dimensions are in mm)

Technical drawing showing dimensions for the SAS-325A-6 speaker:

- Front View:** Total width 93mm, total height 85mm. Mounting holes are 1.5mm wide and 47mm apart. The speaker grille diameter is $\varnothing 62$.
- Top View:** Shows the mounting bracket with a width of 32mm and a depth of 65mm. The distance from the center of the speaker to the bracket edge is 300 ± 20mm. The bracket has a thickness of 5 ± 2mm and a height of 19mm. A wrench size 10 is indicated for the mounting nut.
- Side View:** Shows the speaker's depth of 78mm and the mounting bracket's depth of 65mm. The distance from the center of the speaker to the bracket edge is 300 ± 20mm.
- Bottom View:** Shows the speaker's depth of 43mm and the mounting bracket's depth of 108mm. The distance from the center of the speaker to the bracket edge is 23mm. The mounting holes are 18mm apart and have a diameter of $\varnothing 6$. The wires are labeled Red and Black.

Tolerance: +/- 0.2mm

SAS-81 POLICE SIREN



This small sized piezoceramic siren produces a very powerful sound output at low frequencies and low current consumption. It can be used in an endless type of applications such as car-, motorbike alarms and for many different security functions. The SAS-81 is available in 2 versions: 12Vdc and 24Vdc.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Low frequency sound able to generate a very high sound output in a small and very thin casing
- Low current consumption
- Dust tight and waterproof (IP67)

APPLICATIONS :

- Car alarm
- Outdoor & indoor warning system

SPECIFICATIONS

Operating voltage:	SAS-81-12V: 6-14Vdc SAS-81-24V: 14-28Vdc
Operating current:	SAS-81-12V: 130mA @12Vdc SAS-81-24V: 65mA @24Vdc
Operation frequency:	1.5 - 3.5kHz (±30%)
Alarm tones:	frequency sweep during 1 second
Sound output:	115 dB(A) (±5dB(A) @30cm
Color:	black (or ivory if order quantity > 2000 pcs)
Power cord:	length of 25cm (±3 cm); AWG24
Case material:	ABS plastic
Weight:	60g 1pc/box; 25 pcs/inner box; 100 pcs/box Net weight/Gross weight/Measurement: 7.5kg/9kg/0.06m ³

**115 dB(A)
@ 30cm**

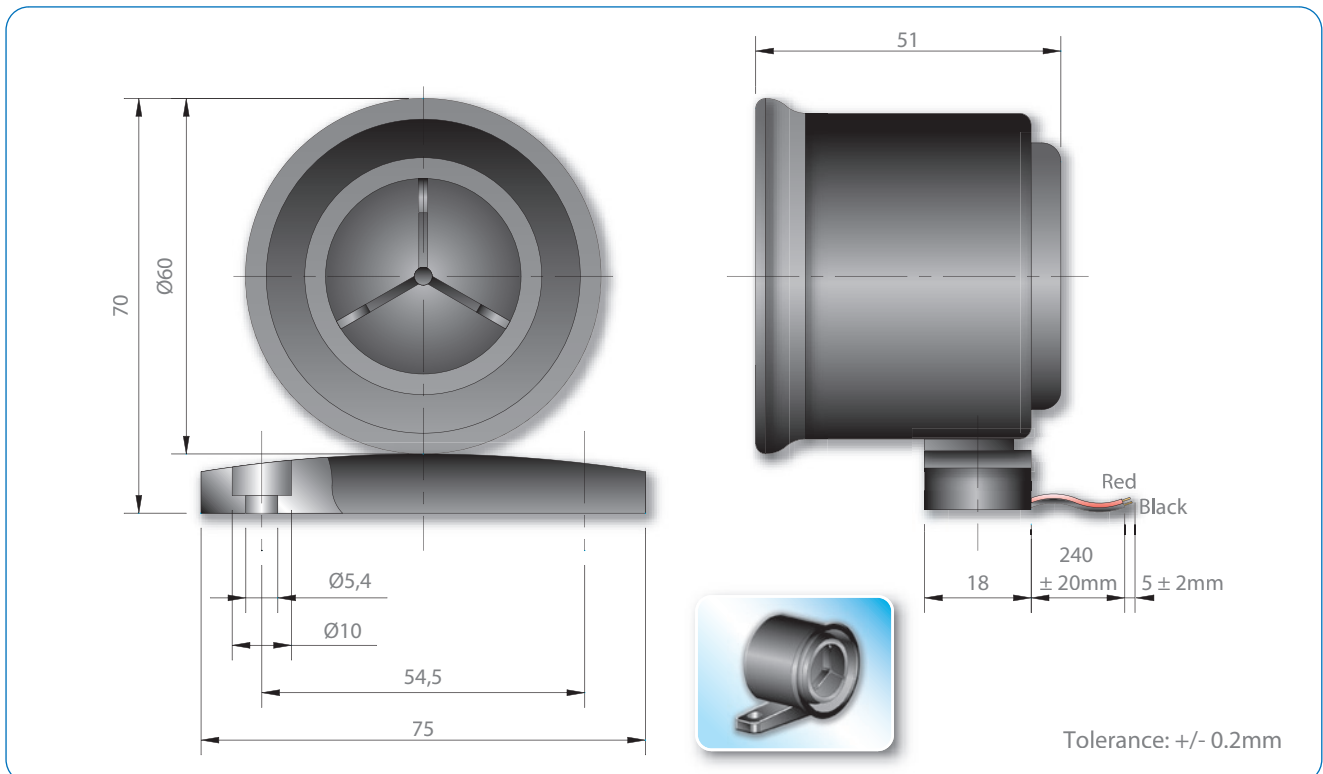


ELECTRICAL PARAMETERS

Models	Current consumption vs. operating voltage	Sound pressure level vs. operating voltage
SAS-81-12V		
SAS-81-24V		

Note : All measurements are made in free air @1 meter @21°C @35% RH.

DIMENSIONS (all dimensions are in mm)



SAS-RL72 RECALLING BELL



This small sized piezo ceramic alarm creates a low and deep soft clock sound for recalling. The low decibel sound is used for cars and vehicles recalling open door danger or other critical situations.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- Low frequency sound with very high sound output in a small and very thin casing
- Dust tight (IP60)

APPLICATIONS :

- Machine alarm
- Open door alarm
- Door bell
- Emergency alarm

SPECIFICATIONS

Operating voltage:	6-28Vdc
Operating current:	@ 12Vdc: 20 mA (max 30mA) @ 24Vdc: 35 mA (max 45mA)
Operation frequency:	400Hz (±20%); intermittent; frequency 0.5Hz
Sound output:	@ 12Vdc: 90dB(A) (±3 dB(A) @30cm) @ 24Vdc: 95dB(A) (±3 dB(A) @30cm)
Color:	black (or ivory if order quantity > 2000 pcs)
Power cord:	length of 6cm (±0.5cm); AWG24
Case material:	ABS plastic
Weight:	24g 1pc/box; 25 pcs/tray; 250 pcs/box Net weight/Gross weight/Measurement: 7kg/8kg/0.03m ³

**95 dB(A)
@ 30cm**

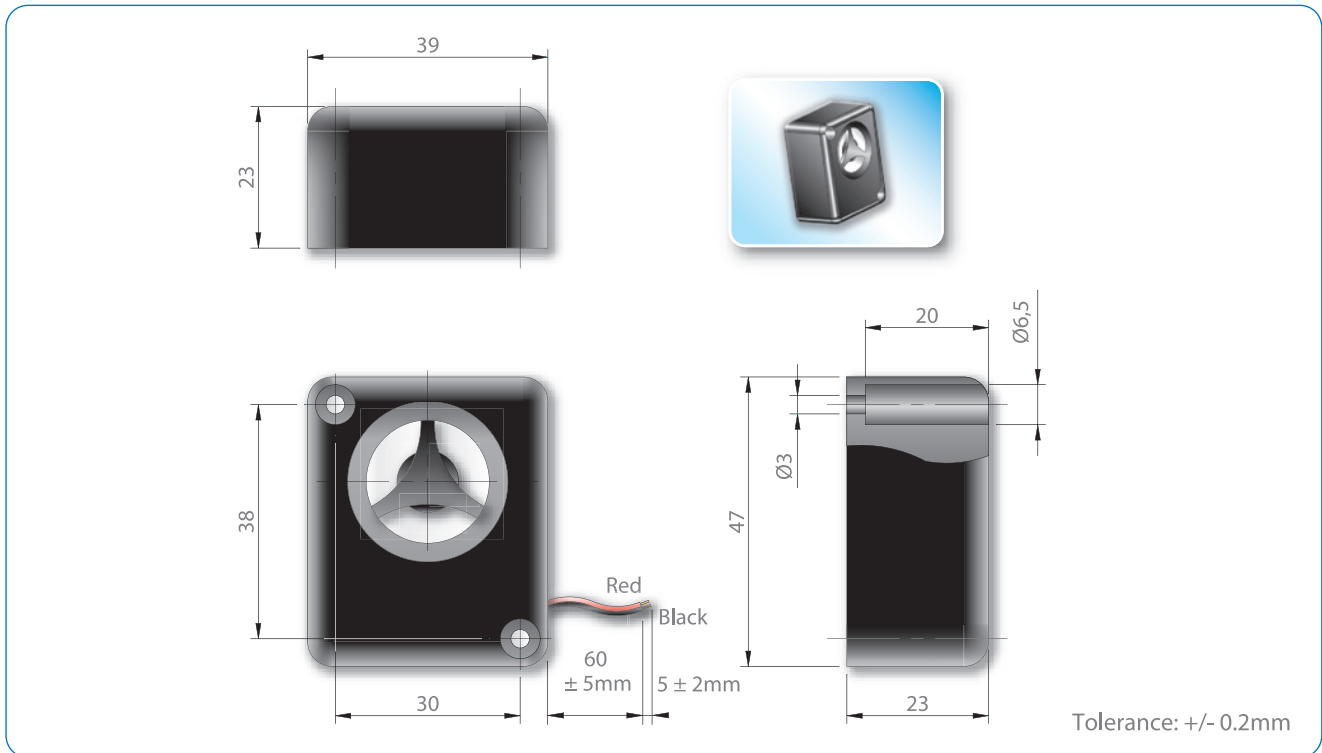


ELECTRICAL PARAMETERS

Model	Current consumption vs. operating voltage	Sound pressure level vs. operating voltage
SAS-RL72	<p>mA</p> <p>V</p>	<p>dB (A)</p> <p>V</p>

Note: All measurements are made in free air @1 meter @21 °C @35% RH. For measurement purposes, the alarm was mounted with screws on a wooden panel.

DIMENSIONS (all dimensions are in mm)



SAS-RH72 WARNING CLICKING BELL



This small sized piezo ceramic alarm creates a very loud intermitting clicking bell sound (closed railway crossing) for warning applications. The high sound clicking warning tone is very strong attention-getting and has an immediate warning character of high danger like collisions, explosions, crashing, ... Suitable applications are: cars, machines, industrial equipment, moving vehicles, crossing barriers, process regulation equipment etc.

ADVANTAGES & APPLICATIONS

ADVANTAGES :

- High frequency sound with very high sound output in a small and very thin casing
- Dust tight (IP60)

APPLICATIONS :

- Collision alarm
- Parking alarm

SPECIFICATIONS

Operating voltage:	6-14Vdc *
Operating current:	10mA @12Vdc (max 15mA)
Operation frequency:	2.7kHz (±20%); intermittent; frequency 3Hz
Sound output:	100dB(A) @12Vdc (±3 dB(A) @30cm
Color:	black (or ivory if order quantity > 2000 pcs)
Power cord:	length of 6cm (±0.5cm); AWG24
Case material:	ABS plastic
Weight:	28g 1pc/box; 25 pcs/tray; 250 pcs/box Net weight/Gross weight/Measurement: 7kg/8kg/0.03m ³

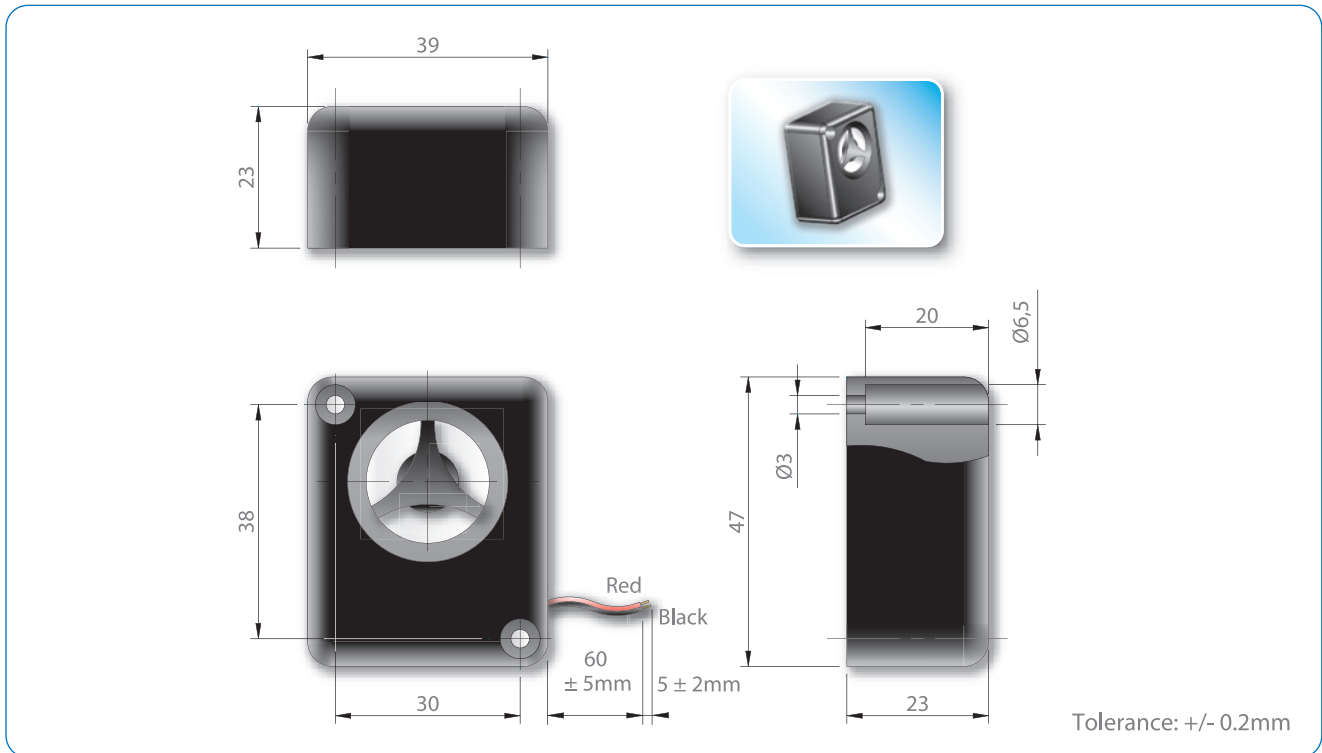
* Also available in 24Vdc version.

ELECTRICAL PARAMETERS

Model	Current consumption vs. operating voltage	Sound pressure level vs. operating voltage
SAS-RH72	<p>mA</p> <p>V</p>	<p>dB (A)</p> <p>V</p>

Note: All measurements are made in free air @1 meter @21 °C @35% RH. For measurement purposes, the alarm was mounted with screws on a wooden panel.

DIMENSIONS (all dimensions are in mm)



ADDENDUM



CONSIDERATIONS ABOUT SOUND

EXPECTED LIFE TIME

WARRANTY AND DELIVERY CONDITIONS

IP RATINGS

CONSIDERATIONS ABOUT SOUND

Loudness

The loudness of a sound perceived by the human ear at a certain location depends on several factors, such as: distance from the source, frequency of the sound, strength of the source, ear sensitivity, conditions of the air etc.

Frequency

The human ear is more sensitive to frequencies between 2000 and 5000 Hz. This is why the operating frequency of alerting piezo buzzers is essentially chosen for this range. The human ear has a logarithmically response to sound pressure, of which the unity is expressed in decibels (dB). The sound pressure level is measured with an audiometer; an instrument developed in order to give an objective indication to sound pressure. The frequency response of this instrument is corrected by a weighing curve to match the characteristics of the human ear. The type of the weighing curve is indicated by the symbol (A) that gives the indication dB(A).

Sound pressure level and distance from the source

In a free progressive spherical sound wave the sound pressure drops by 6 dB each time the measuring distance is doubled. This condition only exists a number of wavelengths away from the source and if the source radiates spherical waves.

Sound character

The character of a sound is determined by the harmonic content, the amplitude relation between the harmonics for a steady signal when the signal varies the rate of attack and decay, and the presence of resonance.

Pulsating sounds

The human ear is particularly sensitive to changes in condition. Switching on and off a sound makes it more attention-getting than a continuous sound of the same frequency. Shifting the frequency in a rapid rate produces a similar effect.

Pulsating frequency

When a pulsed sound source is placed in a reverberant room, reflections tend to fill up the pauses between the pulses. In a large, highly reverberant room, longer pauses are necessary to produce the desired effect: a slow pulsing sound source should be used.

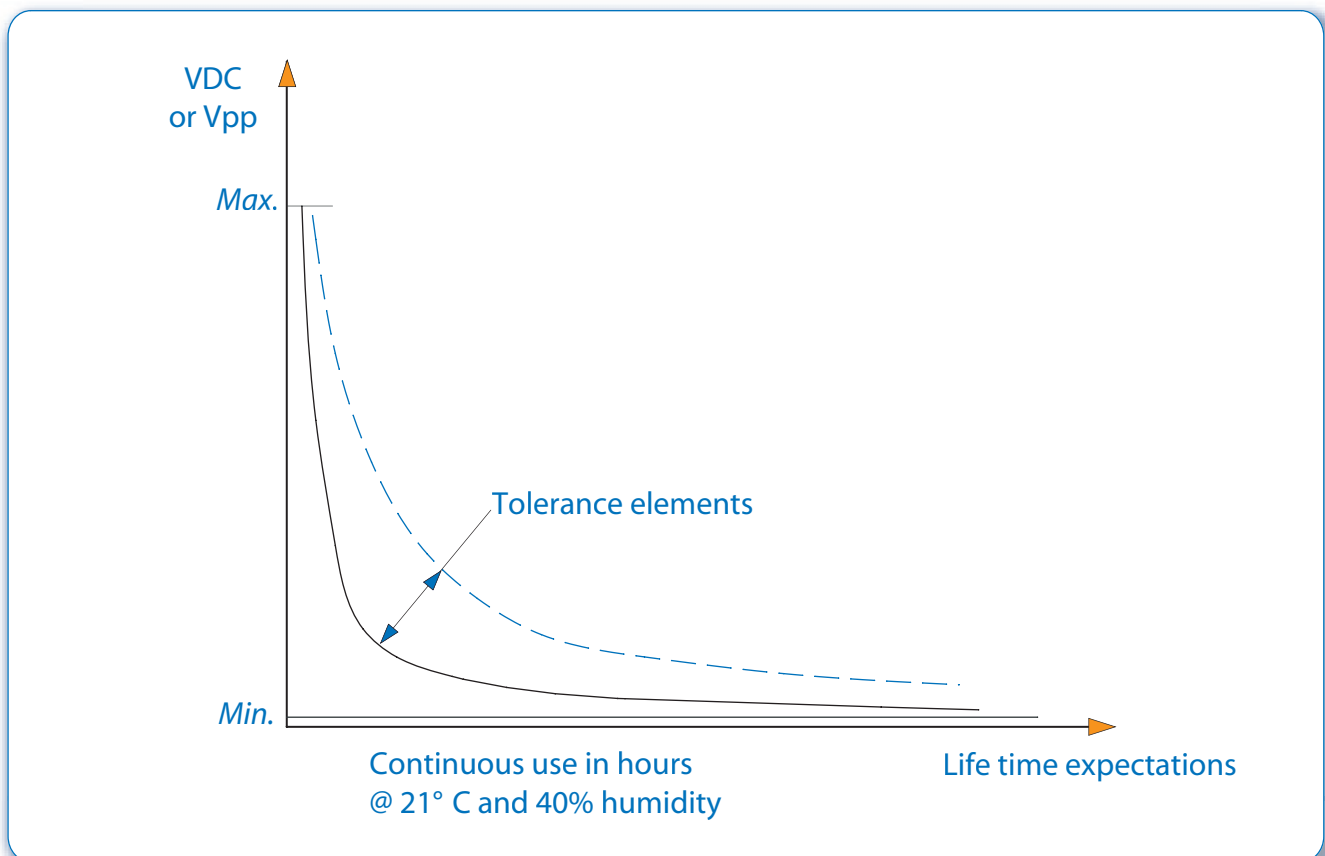
EXPECTED LIFE TIME

The lifetime of our audible components depends on many different factors and is impossible to determine exactly. We therefore publish the expected minimum lifetime measured under specific circumstances and environmental conditions.

If customers need lifetime expectations under other circumstances, we request them to ask for our instructions before performing their own lifetime tests in order to save time and exclude wrong conclusions.

Claims will only be examined and taken into account on condition that guidelines and instructions below have been strictly applied.

Working voltage or drive signal versus expected life time:



The relationship between working voltage and expected life time is one of the prime factors on which life time depends. The curve follows an asymptotic function, strongly depending on tolerance elements published by the suppliers of several basic materials and working environmental conditions.

The expected life time of our different series is defined as follows:

- **T ambient: 21°C; humidity: 40%; free air**
- **Voltage : see below**
- **Mounted as described in our catalogue**

SAS series:

Life time expectations at 12Vdc:

- SAS-2835: minimum 2000 hours
- SAS-2154: minimum 2000 hours
- SAS-87: minimum 9 hours
- SAS-325A-6: minimum 40 minutes
- SAS-81: minimum 1 hour
- SAS-RH72 and SAS-RL72: minimum 24 hours

Remarks:

- Please contact our customer service for information and our recommendations before making life time tests at voltages exceeding the above-mentioned levels per series.
- Sonitron reserve the right to make modifications without pre-announcement to their materials, raw materials, specifications, configurations and prices.
- Applications in this catalogue are indicative and it is the responsibility of the customer to make the necessary tests with our products in order to meet the required specifications.
- If you need further information concerning product selection, performances, life time expectations and environmental situations, please contact us.
- The use of Sonitron products, as critical components in life support systems, is not authorised without the explicit written approval by Sonitron.
- If our Products are used as a critical component (final alarms in life support system), we recommend a model especially adapted to the customers' special test requirements.

WARRANTY AND DELIVERY CONDITIONS

Our products are warranted during one year after date of shipment.

In case products are returned for quality control, the products must be sent to the factory with the following information:

- ° Samples of the defective pieces
- ° Name & address of the customer
- ° Application description
- ° Invoice-number
- ° Copy of the inspection sheet delivered in box
- ° Copy of the written complaint from the customer

and accompanied by our QD1 document, which will be sent to you immediately after registration of your complaint. This document should be duly completed, so that we have sufficient details about the problem in order to deal with the matter swiftly.

The products must be used according to the working instructions and conditions specified in this catalogue. Return shipments will only be accepted for quality control, if the products have not been physically changed, damaged or opened. They will only be accepted if all the required information is available.

IP RATINGS

The IP rating system provides a means of classifying the degrees of protection from dust, water and impact for electrical equipment and enclosures. The system is recognised in most European countries.

The degrees of protection are most commonly expressed as 'IP' followed by two numbers, where the numbers define the degree of protection. The first digit indicates the extent to which the equipment is protected against particles, or to which persons are protected from enclosed hazards. The second digit indicates the extent of protection against water.

DIGIT	FIRST NUMBER-SOLID	SECOND NUMBER-LIQUID
0	Not protected	Not protected
1	Protected against solid objects over 50mm, e.g. Accidental touch by hand	Protected against vertically falling drops of water
2	Protected against solid objects over 12mm diameter, not exceeding 80mm long, e.g. fingers	Protected against direct sprays of water up to 15° from the vertical
3	Protected against solid objects over 2.5mm, e.g. tools and wires	Protected against sprayed water up to 60° from the vertical
4	Protects against solid objects over 1.0mm, e.g. small wires	Protected when sprayed from any direction - limited ingress allowed
5	Protected against dust, limited ingress (no harmful deposit)	Protected against low pressure jets, from all directions - limited ingress allowed
6	Dust tight. Totally protected against dust	Protected against strong jets of water with limited ingress allowed
7	n/a	Protected against temporary immersion between 15cm and 1m for up to 30 minutes
8	n/a	Protected against long periods of immersion under pressure

BUZZERS & TRANSDUCERS

STANDARD SERIES >



SMA-SERIES >



SMAT-SERIES >



SMAC-SERIES >



SMB-SERIES >



See **BUZZERS & TRANSDUCERS** Catalogue

FOR MORE INFORMATION !

PIEZOCERAMIC SPEAKERS

SPS-SERIES >

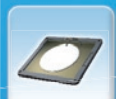
SPS-2220-03



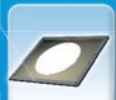
SPS-3530-03



SPS-4640-03



SPS-8770-03



SPS-27-01



SCS-SERIES >



SCS-17

SCS-24

SCS-32

SPECIALS >

SPS 8770-UW
Underwater speaker



ALARMS & SIRENS

SAS-SERIES >



FOR MORE INFORMATION !

See **ALARMS & SIRENS** Catalogue

sonitron®

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