

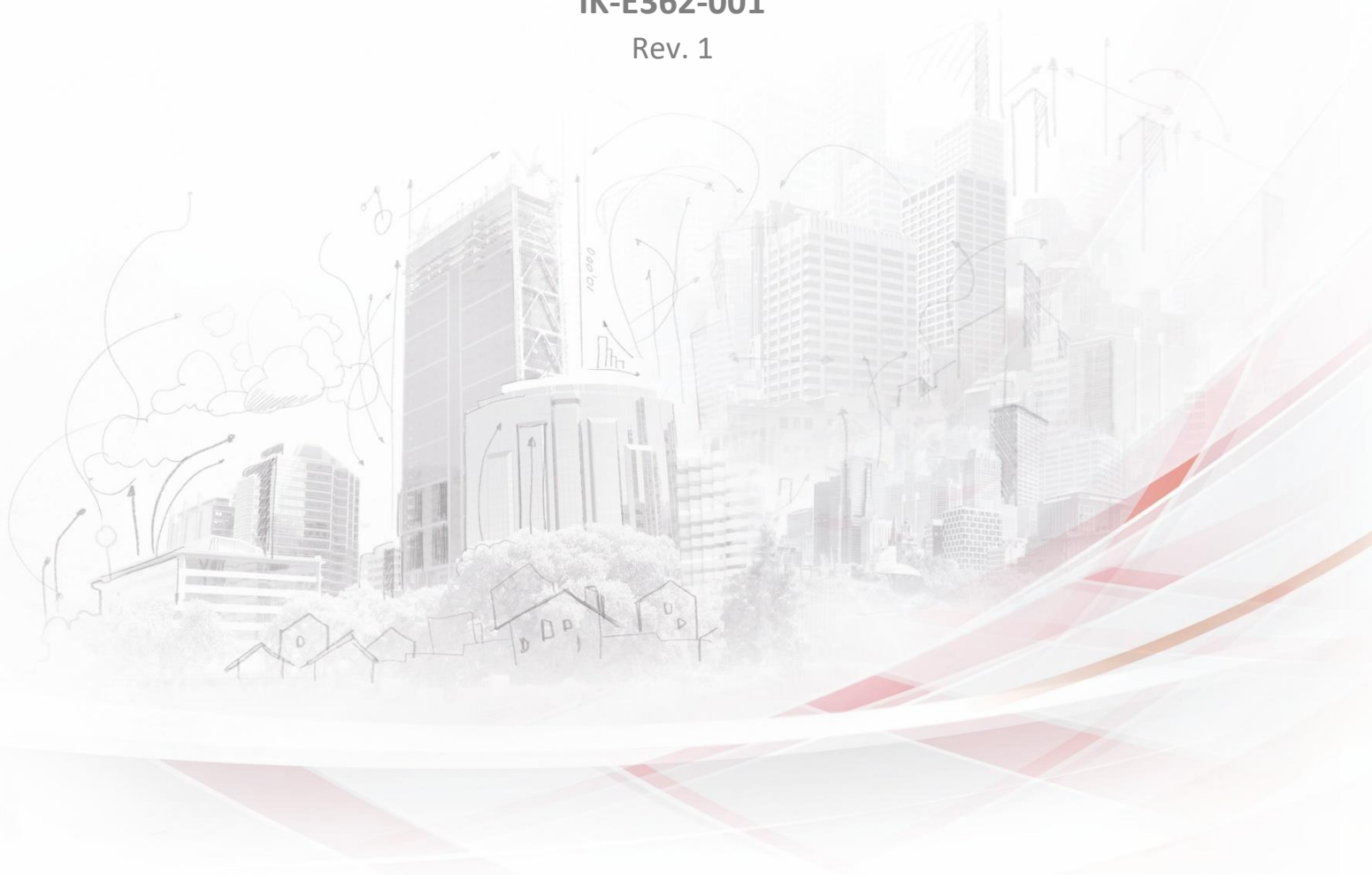
ADDRESSABLE ACOUSTIC AND VISUAL ALARM DEVICES (SOUNDER BEACON)

SAB-6001 and SAB-6006

INSTALLATION AND MAINTENANCE MANUAL

IK-E362-001

Rev. 1



The SAB-6001 and SAB-6006 addressable acoustic alarm devices, which are the subject of this Manual, meet the essential requirements of the following European Parliament and Council (EU) regulations and EU directives:

CPR CPR/305/2011 Regulation (EU) of the European Parliament and of the Council of 9 March 2011 laying down uniform conditions for the marketing of construction products and repealing Council Directive 89/106/EEC;

EMC Electromagnetic Compatibility Directive 2004/108/EC.

The product has been certified for constancy of performance by CNBOP-PIB (*Scientific and Research Centre for Fire Protection – National Research Institute*), notified body No. 1438, confirming the compliance of the product's characteristics/technical parameters required by the EN 54-3:2001+A1:2002+A2:2006, EN 54-17:2005 and EN 54-23:2010 standards.

The characteristics/technical parameters exceeding the requirements of the aforementioned standards and other characteristics/parameters of the product not determined by the aforementioned standards are declared by the Producer.

The product is certified with the Approval Certificate issued by CNBOP-PIB

The Declaration of Performance for the product has been issued by the producer.

The Certificate, Certificate of Approval and Declaration of Performance are available at www.polon-alfa.pl

Read the contents of this Manual before installation and operation. Failure to observe the instructions given in this Manual may lead to hazardous situations or result in a violation of applicable regulations.

POLON-ALFA S.A. holds no responsibility for any damage resulting from the use other than in compliance with this manual.



NOTE! POLON-ALFA reserves the right to make changes to the present manual.

Dispose of the product, which is not suitable for further use, at one of the establishments collecting waste electrical and electronic equipment.



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1. Intended use

SAB-6000 acoustic and visual alarm devices are available in versions presented in the table below:

Symbol	Acoustic type	Recommended height of installation	Light colour	Colour of housing
SAB-6001-3RR	Tone	3 m	Red	Red
SAB-6001-6RR		6 m		
SAB-6001-6WR		6 m	White	
SAB-6001-3RW		3 m	Red	White
SAB-6001-6RW		6 m		
SAB-6001-6WW		6 m	White	
SAB-6006-3RR	Voice	3 m	Red	Red
SAB-6006-6RR		6 m		
SAB-6006-6WR		6 m	White	
SAB-6006-3RW		3 m	Red	White
SAB-6006-6RW		6 m		
SAB-6006-6WW		6 m	White	

SAB-6001 and SAB-6006 addressable acoustic and visual alarm devices are signalling devices intended for indoor use. They are dedicated to operate in the addressable closed loop supervision line of the POLON 6000 fire alarm control panel, but they may also cooperate with the POLON 4000 system. The devices, in order to work correctly, require the presence of two supply voltages at the same time - from the supervision line and from an external power unit.

The alarm devices are able to synchronize a group of elements working in one acoustic and optical space (only for the POLON 6000 system). The level of emitted sound and light does not change depending on the value of the supply voltage.

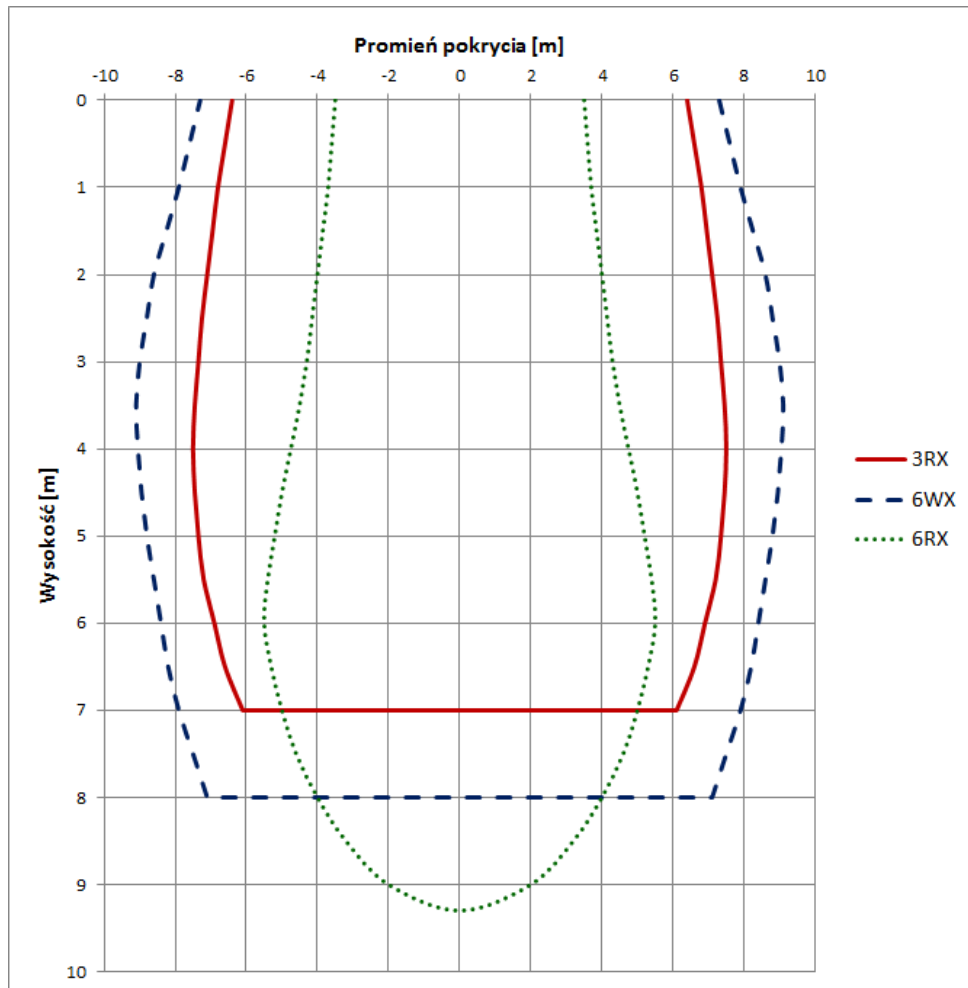
SAB-6001 and SAB-6006 are programmable items. With a USB cable (A → MiniUSB) and dedicated software, it is possible to configure acoustic sequences specific to the requirements of a particular facility and compliant with the PN-EN 54-3:2003 + A2:2007 standard.

The alarm devices are equipped with software-controlled short circuit breakers.

The available messages and alarm horn styles are compatible with those used in the SAW-6000 alarm devices, allowing them to be used in the same acoustic space.

2. Technical specification

Operating voltage of the detection line	16.5 V ÷ 24.6 V
Power consumption from the detection line	≤ 150 μA
Operating voltage from the power unit	9.6 V ÷ 30.0 V
Power consumption from the 12V power supply unit (9.6 ÷ 16.0 V)	≤ 280 mA
Power consumption from the 24V power supply unit (16.0 ÷ 30.0 V)	≤ 170 mA
Power consumption from the power supply unit during standby	< 10 mA
A -Sound level at 1-m distance	to 103 dB
Flashing frequency	0.5 Hz
Flash duration	0.2 s
Operating temperature	-25°C to +55°C
Tightness of the housing	IP 21C
Dimensions incl. the socket	Ø 115 mm x 94 mm
Weight incl. the socket	0.26 kg
Method of address coding	programmable from the control panel



Key: Promień pokrycia [m] – Coverage radius [m]
Wysokość [m] -Height [m]

Height of installation [m]	Coverage radius [m]		
	3RX	6WX	6RX
0	6.4	7.3	3.5
0.5	6.6	7.6	3.6
1.0	6.8	7.9	3.7
1.5	6.95	8.25	3.8
2.0	7.1	8.6	4
2.5	7.25	8.8	4.2
3.0	7.35	9	4.3
3.5	7.45	9.1	4.5

4.0	7.5	9.05	4.7
4.5	7.45	8.95	5
5.0	7.35	8.8	5.2
5.5	7.2	8.6	5.4
6.0	6.9	8.4	5.5
6.5	6.6	8.2	5.3
7.0	6.1	7.9	5
7.5		7.5	4.6
8.0		7.1	4
8.5			3.2
9.0			2

3. Description of construction

The mechanical construction of the acoustic and visual alarm device is shown in Figure 3/1. The principal component is a piezoelectric transducer, used to generate acoustic signal, as well as a LED diode, with a lens placed on the front of the alarm device. The entire device is enclosed in a housing made of non-flammable plastic, which consists of a basket, a cover and a screen.

The SAB-6000 (also in 6001 and 6006 versions) are installed in the G-40S base wired to the detection line and can be connected to external power supply.

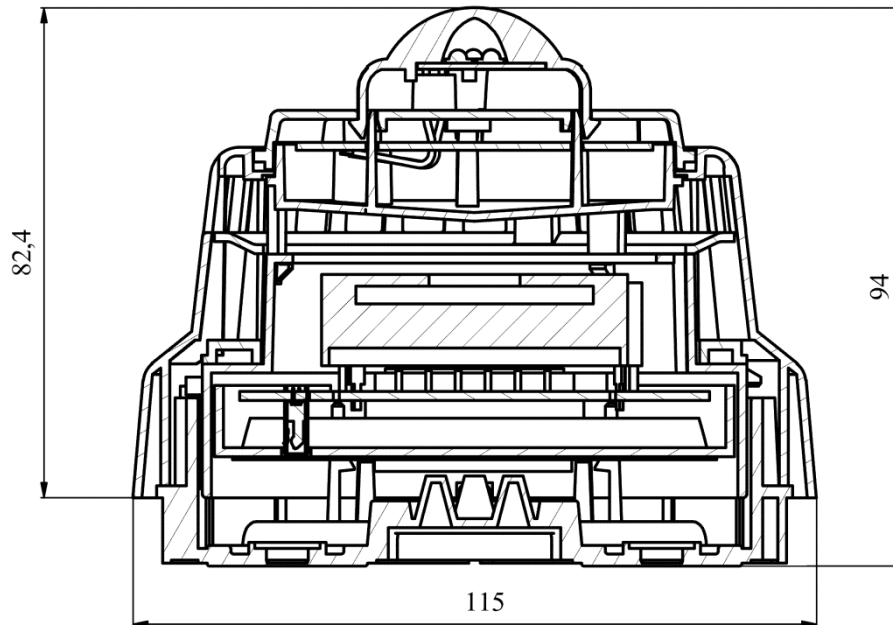


Figure 3/1 Mechanical construction of the SAB-6000 alarm device

4. Description of operation

The microprocessor controlling the alarm device verifies the correctness of operation of its elementary systems for the whole time of the supervision operation, and in case of any irregularities, it sends appropriate information to the control panel.

The control panels of POLON 6000 and POLON 4000 systems communicate with SAB-6001 and SAB-6006 alarm devices by means of a two-wire addressable detection line. The unique, fully digital communication protocol allows any information to be transmitted from the control panel to the alarm device and from the alarm device to the control panel.

The alarm device checks the correctness of the supply voltage and in the event of detecting any fault, it sends the appropriate information to the control panel.

The status of failure or activation of the short circuit isolator, is signalled on the control panel, and additionally, it is signalled by flashing yellow LEDs located along the perimeter of the alarm device.

SAB-6006, upon triggering an alarm, will emit the warning sequence selected during the configuration and compatible with the operating mode, and the red LEDs will flash cyclically, while monitoring the status of acoustic synchronization with other alarm devices in the POLON 6000 system. If the element detects a failure related to the signalling component, the red signalling LEDs will flash in series. While in emergency mode, the alarm device can also start emitting a default alarm signal.

If during the signalling process the detection line is damaged, the signalling continues until the power supply is off.

The alarm device is equipped with internal short-circuit isolator which cut off the operational detection line from the adjacent, short-circuited part, allowing the device to carry out further, undisturbed operation.

5. Operation mode

The newly purchased SAB-6006 alarm device stores in its memory several standard warning sequences (Appendix C), which consist of a warning signal and an optional voice message separated by silent pauses.



Key: Sygnał ostrzegawczy – Warning signal
 Cisza – Silence
 Komunikat głosowy – Voice message
 Czas trwania sekwencji – Duration of sequence

In the SAB-6001 or the SAB-6006 alarm device, in case voice message is not configured, the sequence consists of a warning signal only, as the silent breaks are therefore not used. Available alarm horns were described in Appendix B. Each warning sequence, containing voice message, in accordance with the requirements of PN-EN 54-3:2003 + A2:2007 standard, must meet the timing-related requirements, presented in the table below:

Table 1. Construction of the “warning sequence” in accordance with the standard

Sound pattern	Allowable duration	Remarks
Warning signal (alarm horn)	from 2 s to 10 s	Pattern available in SAB-6001 and SAB-6006
Silence	from 0.25 s to 2 s	In SAB-6006 voice message with silent pause in option, in SAB-6001 message and silent pause not available
Voice message	from 1 s to 27.5 s	
Silence	from 0.25 s to 5 s	

To configure an alarm device, start by selecting a warning sequence relevant for the requirements of the facility where it is to be installed, or if the standard warning sequences are insufficient, creating and coding individual sequences via the USB port and dedicated software.

Maximum 5 internal outputs can be assigned in each alarm device to the POLON 6000 system. For first four outputs you can select/assign one of the 16 programmed sequences, the fifth output corresponds to the visual signalling. Each assigned output address represents one control output in the system. In the POLON 4000 system though, internal outputs are not supported and it is possible to select only one sequence with visual signalling.

You can select one of 3 volume levels for each selected sequence:

- Level 3 – “nominal volume”,
- Level 2 – “nominal volume -6dB”,
- Level 1 – “nominal volume -12dB”.

The power consumption of the alarm device depends both on the type of warning sequence, volume and supply voltage. Guidelines for determining the power consumption in a specific case are presented in Appendix A.

The SAB-6001 alarm device does not offer the possibility of programming voice warning sequences. The sequence always has of a warning signal only.

The visual signalling can operate independently of the acoustic signalling.

6. Description of operation

During the operation of alarm devices, prevent the formation of dew and frost on the surface of the device and protect it against excessive dust contamination.

During any renovation works, the alarm device should be removed or properly secured. If an alarm device is detached from its socket, it has to be protected against painting with a painting tape. Elements damaged during painting and renovation works due to the fault of persons carrying out these works (e.g. a painted housing of an alarm device, a grate sealed with paint, ...) , are not subject to guarantee repairs.

During its life cycle, the SAB-6000 alarm device (in versions 6001 and 6006) should be periodically inspected in accordance with PKN-CEN/TS 54-14:2006 in order to verify the proper functionality of the device and its correct interaction with the control panel. The inspection should be carried out at least every 6 months.

The alarm device is equipped with a magnetic field sensor which allows to test the communication of the device with the control panel and to determine its location in the facility by means of a service kit. After the tester head is placed on the alarm device, a yellow LED of the alarm device starts flashing, indicating correct communication with the control panel.

The functionality of the device can be checked by consecutive activation of acoustic alarms from the control panel. Damaged alarm devices shall be delivered to the producer (**POLON-ALFA S.A., ul. Glinki 155 , 85-861 Bydgoszcz**) for repair.

Note!

By any means, the alarm device must not be dismantled by the user, installer and maintenance technician. The alarm devices can be installed by authorised installer only.

7. Installation of alarm devices

The SAB-6001 and SAB 6006 alarm devices shall be installed (height, positioning) in accordance with the specified design guidelines. They are installed in facilities where any appearance of fire should be signalled.

The alarm devices operate in closed loop lines, closed loop lines with straight branching or in radial detection lines of the POLON 6000 and POLON 4000 systems (see Operation and Maintenance Manual for the POLON 6000 and POLON 4000 control panels). They are installed in G-40S bases. The cables of the alarm system shall be laid in accordance with the regulations applicable for low-voltage installations (below 42 V).

The wiring to the base is the same as for the detectors of the 6000/4000 series, but instead of the remote indicator terminals an external 12 or 24 VDC power supply unit can be connected.

Marking of terminals in a socket:

“1” – negative terminal of detection line input

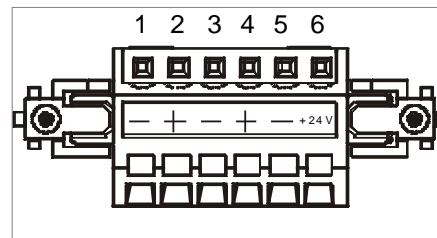
“2” - +LD (detection line input)

“3” – negative terminal of detection line output

“4” - +LD (detection line output)

“5” – negative terminal for external power supply

“6” - +24V terminal for external power supply



As timing synchronization is not supported here, alarm devices in the POLON 4000 system are not supposed to operate in single acoustic (applies to voice alarm devices only) or visual space in accordance with the requirements of the standard.

Note!

The alarm devices should not be installed in corrosive environment containing corrosive gases and vapours or dust. Condensation on acoustic signalling devices is not permitted.

8. Safety conditions

8.1. Repairs and maintenance

Maintenance works and periodical inspections must be carried out by authorised personnel of companies authorised or trained by POLON-ALFA.

All repairs must be carried out by the producer.

POLON-ALFA shall not be held liable for the operation of equipment maintained and repaired by unauthorised personnel.

8.2. Work at heights

Work at heights for installation of alarm devices must be carried out with utmost caution using operational equipment and tools.

Pay special attention to the stability of ladders, hoists, etc.

Power tools shall be used in accordance with the conditions for their safe operation specified in the relevant manufacturer's instructions.

8.3. Eye protection against dust

Use protective goggles and dust masks when carrying out works that generate a lot of dust, especially when drilling holes in ceilings to fix the sockets for the alarm devices.

9. Storage and transport

9.1. Storage

The SAB-6000 alarm devices should be stored indoors where there are no vapours or corrosive gases, the temperature is between 0°C and + 40°C, and the relative humidity does not exceed 80% at a temperature of + 35°C.

During storage, the alarm device should not be exposed to direct sunlight or heat from heating devices.

The period of storage in the shipping packaging should not exceed 6 months.

9.2. Transport

The SAB-6000 alarm devices should be transported in closed spaces of the transportation means, in packaging corresponding to the requirements of the applicable transportation regulations.

The temperature during transport should not be lower than - 40°C and not higher than + 70°C, and the relative humidity shall not exceed 95% at + 45°C or 80% at + 70°C.

Appendix A

(informative)

Table 2. Maximum power consumption of the alarm device in acoustic warning mode.
Values expressed in mA.

Number of alarm horn	12 V power supply (9.6 V ÷ 16.0 V)			24 V power supply (16.0 V ÷ 30.0 V)		
	Volume -12 dB	Volume -6 dB	Nominal volume	Volume -12 dB	Volume -6 dB	Nominal volume
1	35	40	50	35	35	40
2	35	40	55	35	35	45
3	35	40	45	35	35	40
4	35	35	45	35	35	40
5	35	40	45	35	35	40
6	35	40	55	35	35	45
7	35	40	50	35	35	45
8	35	40	60	35	35	45
9	40	55	135	35	45	85
10	40	50	120	35	40	75
11	40	60	190	35	50	115
12	40	55	140	35	45	90
13	35	40	75	35	40	60
14	35	40	55	35	35	45
15	35	40	60	35	35	45
16	40	55	140	35	45	90


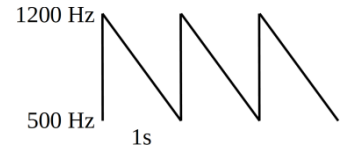
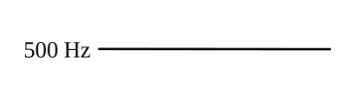
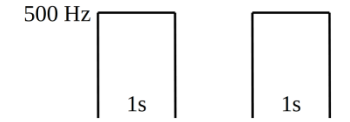
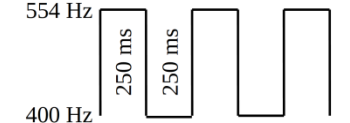
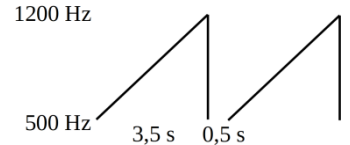

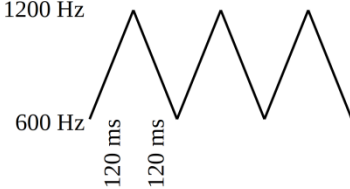
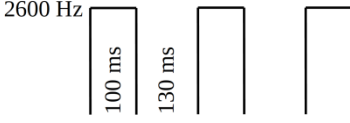
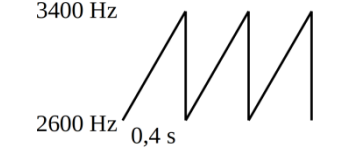
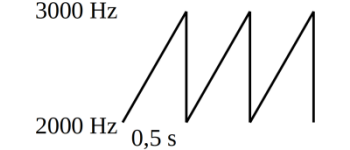
For visual signalling add 55 mA for power supply (16.0 V ÷ 30.0 V) and 90 mA for power supply (9.6 V ÷ 16.0 V).

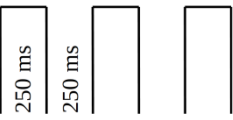
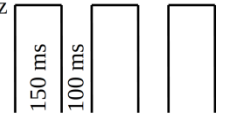
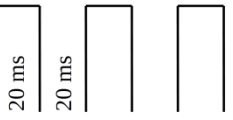

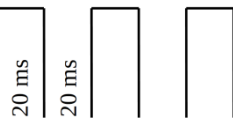
If the SAB-6006 alarm device emits a warning signal with voice message, the maximum power consumption should be considered to be the value for horn No. 11.

Appendix B

(informative)

Table 3. Standard alarm horns

No.	Sound pattern	
1	Intermittent tone Emergency evacuation signal as per ISO 8201	
2	A 'saw tooth' descending tone, unified alarm signal as per DIN 33404-3	
3	Constant frequency, emergency evacuation signal as per BS 5839-1	
4	Intermittent tone alarm signal as per BS 5839-1	
5	Step variation of frequency, emergency evacuation tone as per NF S32-001	
6	A 'saw tooth' ascending tone, emergency evacuation signal as per NEN 2575	
7	Intermittent tone warning signal as per SS 03 17 11	
8	A "triangular" tone, the frequency cyclically rises and falls, modified "PIES MODULATION"	
9	Intermittent tone of 2600 Hz frequency	
10	A 'saw tooth' ascending tone,	
11	A 'saw tooth' ascending tone,	

12	Intermittent tone of 2500 Hz frequency	2500 Hz 
13	Intermittent tone of 3300 Hz frequency	3300 Hz 
14	“Phone ring” tone	800 Hz 
15	Constant frequency tone of 800 Hz	800 Hz ————— 
16	Package of 13 20 ms/20ms pulses of 2500 Hz frequency, 0.5 s break	2500 Hz 

Tones numbered 1 to 6 are compliant with appendix D to PN-EN 54-3:2014-12.

Table 4. Minimal sound levels for tone signals

No.	15°	45°	75°	105°	135°	165°
1	80 dB	86 dB	93 dB	92 dB	83 dB	82 dB
2	90 dB	91 dB	96 dB	96 dB	88 dB	93 dB
3	85 dB	86 dB	91 dB	91 dB	82 dB	85 dB
4	85 dB	86 dB	91 dB	91 dB	82 dB	84 dB
5	84 dB	88 dB	93 dB	92 dB	85 dB	85 dB
6	90 dB	91 dB	98 dB	96 dB	88 dB	92 dB
7	80 dB	88 dB	90 dB	88 dB	85 dB	85 dB
8	90 dB	92 dB	98 dB	96 dB	88 dB	92 dB
9	94 dB	95 dB	103 dB	102 dB	91 dB	88 dB
10	95 dB	95 dB	103 dB	103 dB	91 dB	90 dB
11	95 dB	96 dB	103 dB	102 dB	91 dB	93 dB
12	96 dB	96 dB	103 dB	103 dB	91 dB	92 dB
13	87 dB	95 dB	99 dB	99 dB	91 dB	91 dB
14	95 dB	93 dB	101 dB	100 dB	87 dB	94 dB
15	85 dB	89 dB	91 dB	91 dB	86 dB	85 dB
16	95 dB	94 dB	100 dB	100 dB	87 dB	93 dB

Appendix C

(informative)

Table 5. Standard alarm sequences for voice signalling device in Polish

Sequence no.	Alarm signal	Content of voice message
1	Quick 2.6 kHz pulses every 0.13 s	"Attention, Attention! I announce a fire alarm. Please follow the evacuation plan."
2	Step variation of frequency switching between two 54/440 Hz tones every 0.5 s	"Attention, Attention! A fire was detected in the building, please follow the fire instruction"
3	Rising frequency change from 2.0 kHz to 3 kHz	None

NOTE!

As default, sequences 4 – 16 are not programmed in the alarm device's memory, so if chosen, the alarm device will emit error signal (alarm no. 1).

Table 6. Minimal sound levels for voice sequences

Sequence no.	15°	45°	75°	105°	135°	165°
1	94 dB	96 dB	103 dB	103 dB	90 dB	91 dB
2	83 dB	90 dB	93 dB	93 dB	86 dB	84 dB

Notes:

