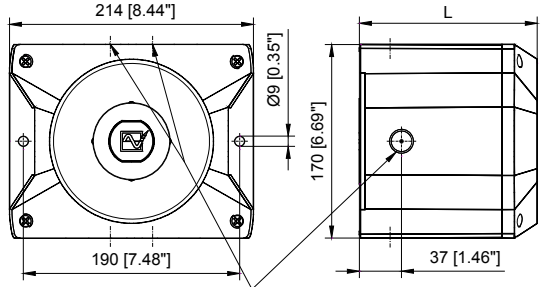
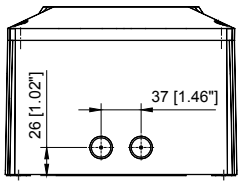
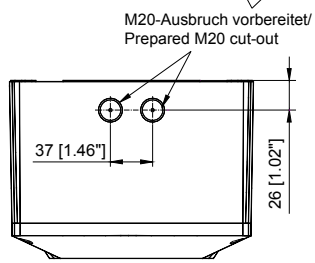
Dimensions



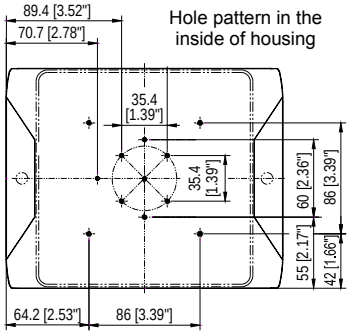
Content of package:
1x Alarm device
1x Diaphragm nipple M20
1x Operating instruction
1x Resistor (only –SSM)

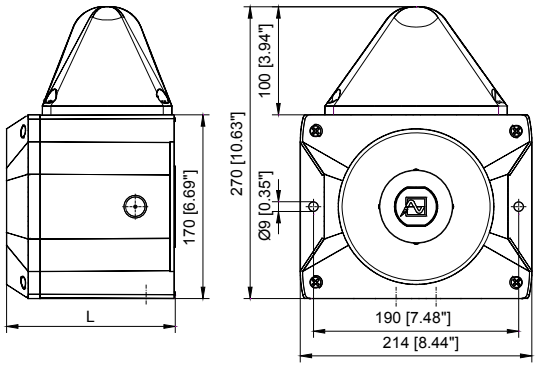
	L
PA (X) 10..	156,2 mm [6,15"]
PA (X) 20..	181,2 mm [7,13"]





PA 10/ PA 20





PA X 10-10/ PA X 10-15
PA X 20-10/ PA X 20-15

Technical Data

	PA 10			PA 20			PA X 10-10						PA X 10-15						PA X 20-10						PA X 20-15					
Nom. sound level	110dB (A) 1m			120dB (A) 1m			110dB (A) 1m												120dB (A) 1m											
Volume control	-10dB			-9dB			-10dB												-9dB											
Tones	80																													
Flash energy	-						10J						15J						10J						15J					
Flash frequency	-						1Hz																							
Rated voltage (limits see approvals)	24 V DC or 12-48V DC	24V AC	110 – 240 V AC 50/60 Hz	24 V DC oder 12-48V DC	24V AC	110 – 240 V AC 50/60 Hz	12V DC	24V DC	48V DC	24V AC	115V AC	230V AC	12V DC	24V DC	48V DC	24V AC	115V AC	230V AC	12V DC	24V DC	48V DC	24V AC	115V AC	230V AC	12V DC	24V DC	48V DC	24V AC	115V AC	230V AC
Operating voltage range	10 – 60 V DC	20 – 30V AC	95 - 265 V AC	10 – 60 V DC	20 – 30V AC	95 - 265 AC	10,5 – 15 V	18V – 30V	40V – 60V	20 – 30V	95V – 127V	195V – 253V	10,5 – 15 V	18V – 30V	40V – 60V	20 – 30V	95V – 127V	195V – 253V	10,5 – 15 V	18V – 30V	40V – 60V	20 – 30V	95V – 127V	195V – 253V	10,5 – 15 V	18V – 30V	40V – 60V	20 – 30V	95V – 127V	195V – 253V
Current consumption Sounder (max.) [mA]	24V: 360 485	850	140	24V: 800 880	1600	330	490	360	230	850	150	100	490	360	230	850	150	100	460	800	500	1600	330	200	460	800	500	1600	330	200
Current consumption Beacon (max.) [mA]	–	–	–	–	–	–	1400	680	300	1400	300	160	1550	850	440	1400	330	220	1400	680	300	1400	300	160	1550	850	440	1400	330	220
Power consumption	24V: 8,5 W 12-48V: 9W	17,5 VA	15,5 VA	24V: 24,5 W 12-48V: 27W	17,5 VA	50 VA	22 W	22 W	32 W	54,5 VA	34,5 VA	40,5 VA	29 W	27,5 W	32,5 W	57 VA	45 VA	65,5 VA	27,5 W	38 W	50,5 W	80 VA	62,5 VA	72 VA	35 W	43,5 W	51 W	82,5 VA	72,5 VA	97 VA
Duty cycle	100%																													
Connection terminal	0,14 - 2,5mm² / AWG24 - AWG 14 (stranded)																													
Ingress protection	IP66 (EN60529), Type 4 & 4x																													
Resistance against impact	IK08 (EN50102)																													
Protection class	II ⧈ Double insulated equipment																													
Operating temperature	-40°C…+55°C																													
Storage temperature	-40°C…+70°C																													
Max. rel. Humidity	90%																													
Cable entry	7x M20 (prepared)						5x M20 (prepared)																							
Sealing range of grommet	7 – 13 mm With the use of cable diameters <7mm, a cable screw joint with sufficient ingress protection must be provided																													
Material of housing	PC/ABS Blend																													
Material of lens	PC																													
Installation position	arbitrarily																													
Options	-SSM, (see page 11)																													
Accessory	Sealing plug (Art-no. 28300000002)																													
Lens colours	-						clear, white, yellow, amber, red, green, blue																							

Approvals (valid for marked equipment)

Construction Product Regulation (305/2011/EC) CE 12	**PA10/ PA 20, 110-230V AC:**	**PA10/ PA 20, 24-48V DC:**	**PA10-SSM, PA 20-SSM:**
	VdS 0786-CPD- 21184	VdS 0786-CPD- 21223	0786-CPD- 21224

	PA 10/ PA 20	
Options	–SSM (24V DC)	
Rated voltage	24 – 48 V DC	110V – 240V AC
Operating voltage range acc. to EN54-3, EN54-23	18V – 60V Option: -SSM (18V – 30V)	95V – 265V AC
Tone 2 15 60 104 131 146	Compliant with the Construction Product Directive (89/106/EWG) 1200Hz-500Hz (Saw tooth) DIN/PFEER P.T.A.P. 500Hz-1200Hz (Slow whoop) 825Hz (Continuous) 660Hz (Intermittent tone) 800Hz/ 1000Hz (Alternating tone) 544Hz/ 440Hz (NF S 32-001)	
Signaling area	EN54-3: see documents 30305-005-1 (PA 10) and 30306-005-1 (PA 20)	
Environmental protection class	Type B	
Testing takes place using the supplied diaphragm nipple and the outer fastening bores.		

VdS	**PA10 / PA 20, 110 – 230V AC:**	**PA10/ PA 20, 24 - 48V DC:**	**PA10-SSM, PA 20-SSM:**
	G212116	G212191	G212192
	Data see Construction Product Regulation (305/2011/EC)		
GL	**61062-13 HH** Environmental Category C, H, EMC1		
MED	**61739-14 HH**		

		Rated voltage	Audible Signal Appliance Fire Alarm Equipment ULSZ, ULSZ7	Audible and Visual Signal Appliance General Signal Equipment UCST, UCST7 and UEES, UEES7
UL, cUL	**PA 10** **PA 20**	24V – 48V DC (Fire Alarm Equipment) 12V – 48V DC (General Signal Equipment)	x Special application, limited operating voltage range 18 – 60V DC	x
	PA 10 **PA 20**	24V AC 110 – 240V AC	-	x
	PA X 10 .. **PA X 20 ..**	115V AC 230V AC 24V AC 12V DC 24V DC 48V DC	-	x

PATROL sounders and combined units **PA 10/ PA 20/ PA X 10../ PA X 20..** comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

UL/ cUL specifications:

Inrush current

PA 10, PA 20	**Surge Current Peak**	**Surge Current RMS (16,7ms frame)**	**Voltage**
24 – 48 V DC	27 A	4,5 A	60 V DC
24 V AC	11,5 A	6,8 A	30 V AC
110 – 240 V AC	18,5 A	1,45 A	265 V AC

Suitable for indoor and outdoor use.
Signaling area: see document 30305-005-1 (PA 10) and 30306-005-1 (PA 20)

Cable gland entries:
Conduit installation needs to be UL/ cUL listed fittings suitable for knockout openings. The supply wiring has to be enclosed in metal conduits for products for Fire Alarm Use.

Installation:
The units shall be installed indoors or outdoors in accordance with the manufacturer's installation instructions as well as the National Electrical Code (NFPA 70) and the National Fire Alarm Code (NFPA 72) for the units evaluated for Public Fire Alarm applications in the U.S. In Canada, they shall be installed in accordance with the Canadian Electrical Code, Part 1 and the Standard for the Installation of Fire Alarm Systems CAN/ULC-S524-M91 for the units evaluated for Public Fire Alarm applications. The installation shall also be in a manner acceptable with the local authority having jurisdiction.

For audible application for Fire Alarm Service use both terminals for connection. Break wire run to provide Electrical Supervision (see UL 464 clause 39.1e). The tone no. 111 is to be used for evacuation use only (see UL 464 clause 39.1e)

Volume control: PA 20/ PA X 20 ..: The volume control has to be set to the secured factory position.

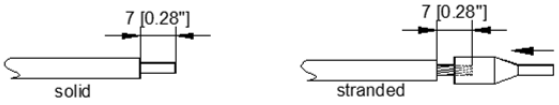
cUL directional characteristics for the horn:

AXIS	LE	dBA
Horizontal	32 deg. left or right	-3
Horizontal	28 deg. left or right	-6
Vertical	32 deg. left or right	-3
Vertical	28 deg. left or right	-6

Min. Output sound pressure level: [dB(A)]
(Tone no. 2, 15, 60, 104, 131, 146, 111, 112, and 113 was used for this test.)

Type	**Voltage**	**UL 464 db(A) at 10 ft ++**	**CAN/ULc-S525-07**
PA 10 (24-48 DC)	18V DC	82,4 (for tone 113)	92,4 (for tone 111)
PA 20 (24-48 DC)	18V DC	84,3 (for tone 113)	99,3 (for tone 111)

Connecting cables:



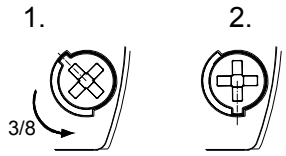
Taking into operation

Safety notes:

- Installation must be carried out by an electrician in compliance with the latest codes and regulations.
- Danger: High voltage may be present.
- Prior to opening, it must be ensured that no voltage is applied to the device.
- Before electrical connection, the supply voltage on the type plate is to be checked. The wrong operating voltage can lead to damages or to the destruction of the equipment.
- During installation it must be ensured that the connection cables are secured against tension and distortion. Please observe: The devices are not designed for portable use.
- CAUTION: When making installation, route field wiring away from sharp projections, corners and internal components.
- The opening of the bell mouth must not point upwards, especially in the case of use outdoors or in a particularly dusty environment.
- The function of the unit is only guaranteed if the upper and lower section is joined correctly.

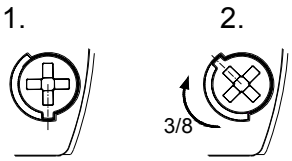
When using the sounder –beacon combination (PA X 10-10; PA X 10-15; PA X 20-10; PA X 20-15):
- In order to prevent detriment to sight, continuously looking directly in the activated light is to be avoided.

Opening the housing:



By loosing the four cover screws, the upper section can be removed.

Closing the housing

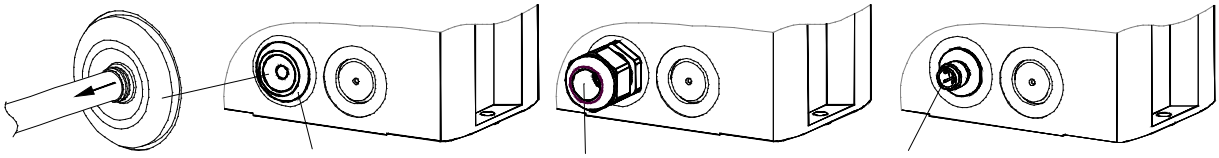


The housing is closed by turning the cover screws to the limit position until the housing locks into place.

The unit is not closed when delivered.
Sealing plugs for the housing screws are available as accessories.

Cable gland entries

To guarantee the specified protection type, cable grommets with a protection type of IP 66 are to be installed at the openings provided for this purpose. The supplied diaphragm nipple can be replaced with a cable gland or with an M12 plug connection with a flange measurement of M20.



IP 66 only when funnel of membrane is pointing outward.
After installation of the cable remove the remains of the diaphragm.

Diaphragm nipple IP 66 (provided)

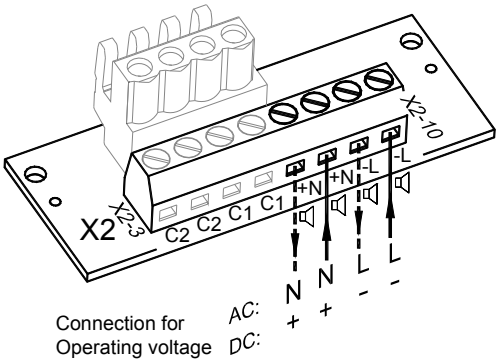
Cable gland IP 66

M12 plug connector IP 66 (for low voltage versions)

Circuit board for electrical connection (located in the base section):

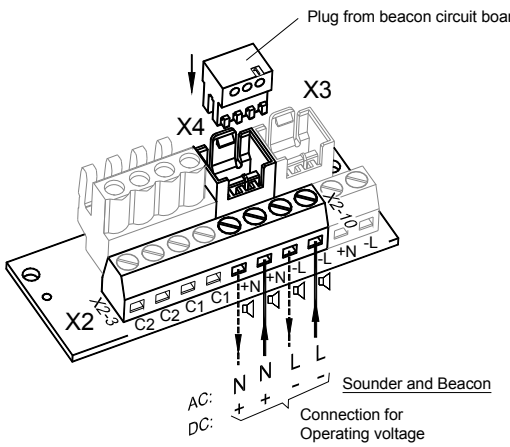
Electrical connection and tone selection using external control C1 and C2

Terminal for operating voltage - Sounder:

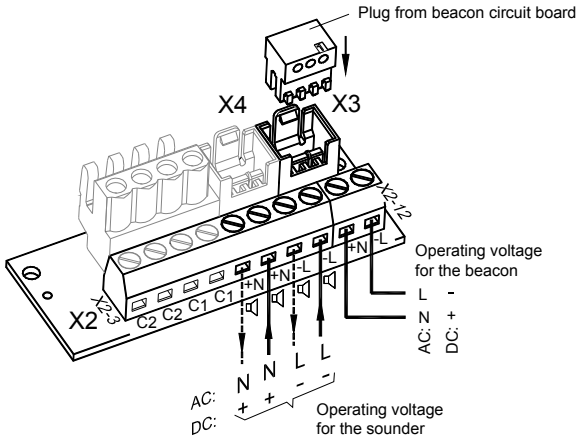


Connection for Operating voltage

Terminal for operating voltage - Sounder-beacon combination:



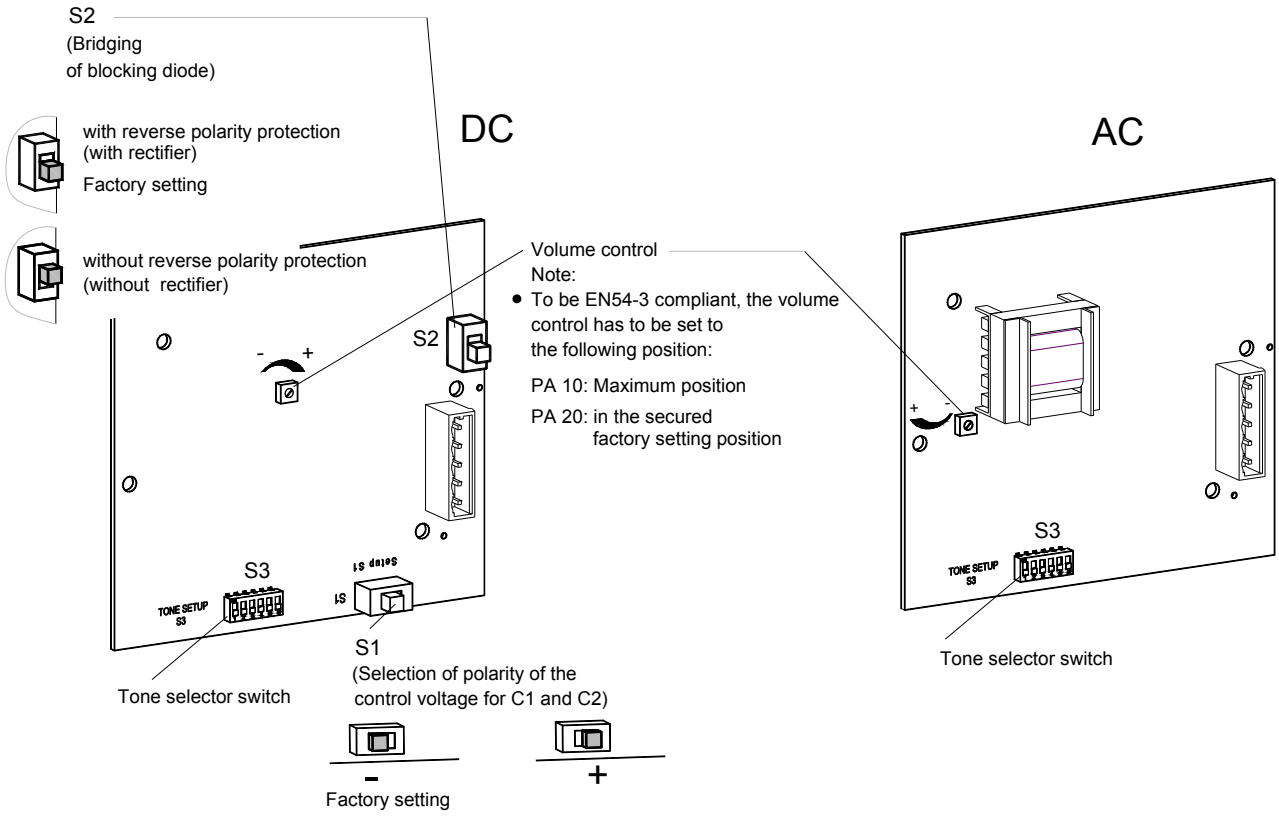
Common connection of beacon and sounder (Delivery status)



Separate connection of beacon and sounder

The desired tone can be selected using the tone selector switch S3 (on the driver circuit board). The available tones are described in the tone table in the appendix.
After establishing the supply voltage the tone is generated.

Driver circuit board of sounder (located in the upper section):

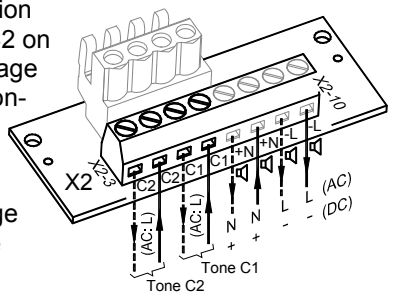


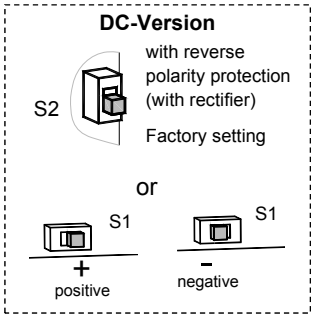
Change of the tones by external control

For applications which require more tones than just the base tone, it is possible to provide up to three additional tone types with the use of the following electrical controls.
As a basic rule, the desired base tone (♪, see tone table in the appendix) is set with the tone selector switch S3 on the driver board. The corresponding additional tones (C1, C2, C1+C2) can be gathered from the table "Selection of the tones".

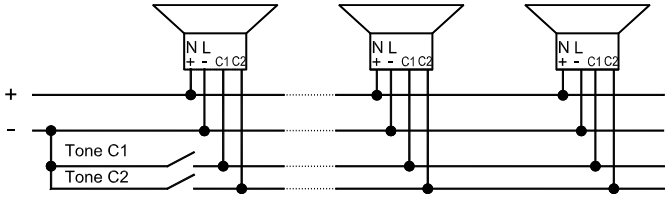
Tone selection with control input (TAS)

DC-Version:
When used with correct polarity, the tone selection takes place through the control inputs C1 and C2 on the circuit board. In the process, the supply voltage must always be applied together with the two control inputs. Setting of switch S2 in position
"with rectifier"
= with reverse polarity protection.
The selection of the polarity of the control voltage ("+" or "-") takes place with the switch S1 on the driver board.
"+": positive control
"-": negative control (factory setting)
Caution: If the control voltage is greater than the supply voltage or the supply voltage is not applied, the operating current supply is provided through the control inputs. A corresponding load capacity must then be guaranteed.





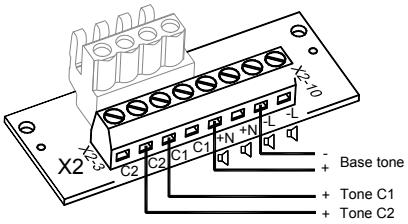
AC-version:
In the AC version the tone selection takes place by connecting the phase "L" of the supply voltage to the control inputs C1 and C2. In the process, the supply voltage must always be applied together with the two control inputs.

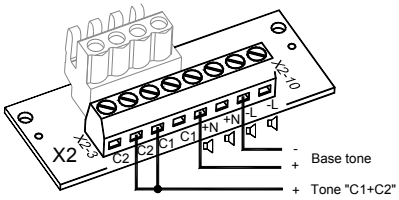


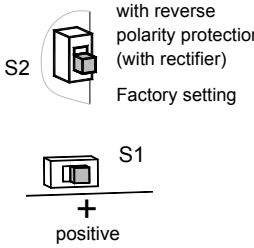
Example for DC "–" -control

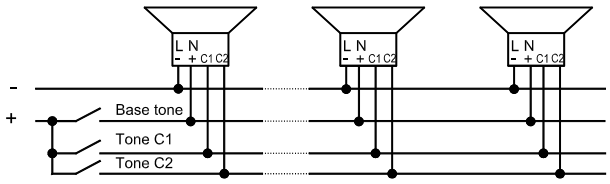
Tone selection with supply through control input (TAV) - for all DC versions

The sounder can be supplied with operating voltage through the control inputs C1 and C2 on the circuit board. Supply and tone selection thus take place simultaneously.
The minus pole of the sounder must be connected. With connection of the positive voltage to the plus pole of the circuit board, the base tone (♪) is generated; with connection to C1 or C2 the corresponding tone is selected. With simultaneous connection of the positive voltage to C1 and C2 the tone "C1+C2" is selected.
The switch S1 on the driver board must be set to "+".





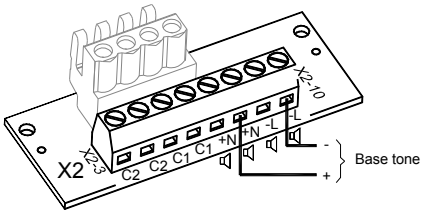


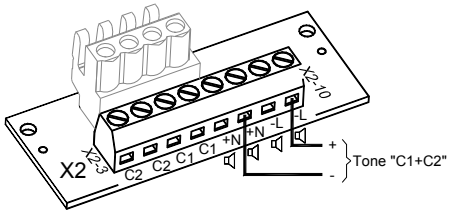


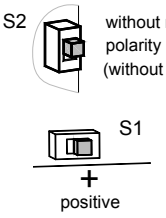
Connection example

Tone selection through pole reversal (TAR) - for all DC versions except for option -SSM

If the switch S2 on the driver board is in the position "without reverse polarity protection = without rectifier", the tone "C1+C2" can be selected in addition to the base tone through pole reversal. The switch S1 must be set to "+". The control inputs C1 and C2 may not be switched on the circuit board.







Option –SSM (Soft-Start-Module) (24V DC only):

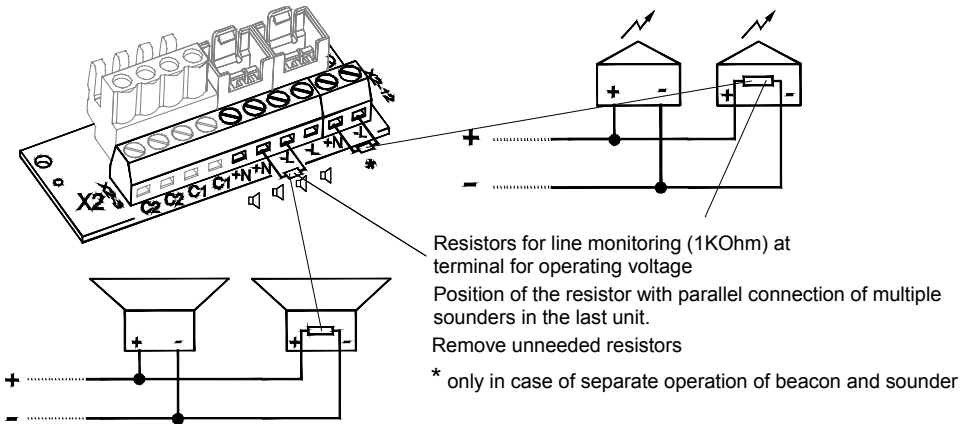
- Limitation of start-up peak:

PA 10-SSM:	: max. 2,1 A	
PA 20-SSM:	: max. 4,5 A	
PA X 10-xx-SSM:	: max. 2,1 A	: max. 4,5 A
PA X 20-xx-SSM:	: max. 4,5 A	: max. 4,5 A

- Switching through the operating voltage to equipment: above 7V
- Resistor for line monitoring mounted

Operating voltage range: 18V – 30V DC

Connection of a resistor for line monitoring:



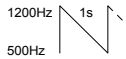
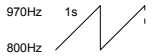
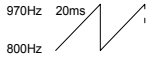
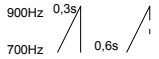
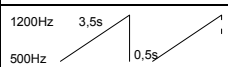
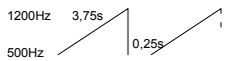
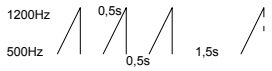
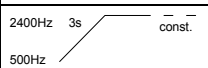
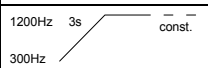
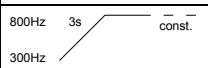
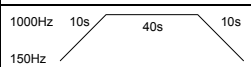
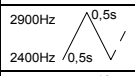
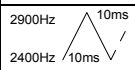
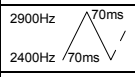
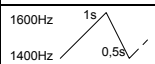
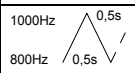
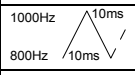
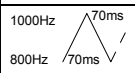
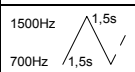
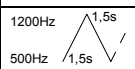
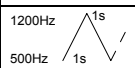
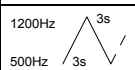
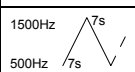
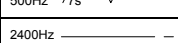
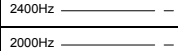
Maintenance, Service and Ordering Spare Parts

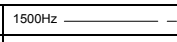
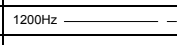
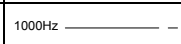
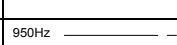
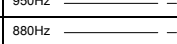
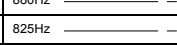
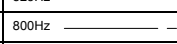
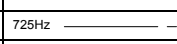
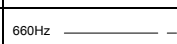
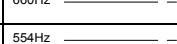
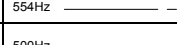
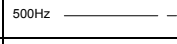
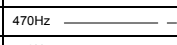
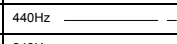
The device does not require any special maintenance.
External cleaning should be done with a mild soap solution without the use of solvents.
The device may only be operated in the undamaged state within the specified rating.
Conversions, alterations, improper and inadmissible use as well as the non-observance of the notes in these operating instructions shall render the warranty null and void.
Components may be replaced only by original spare parts.
As a matter of principle, repairs are to be carried out in the manufacturing works.

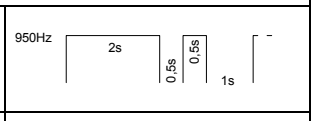
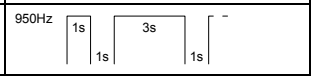
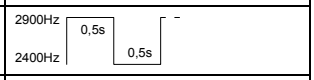
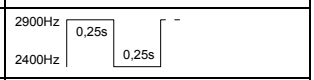
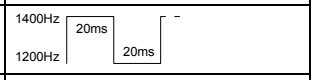
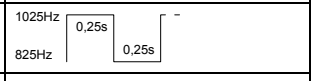
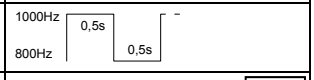
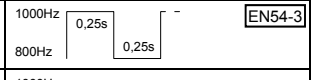
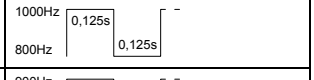
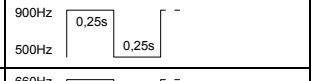
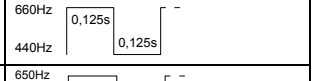
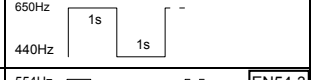
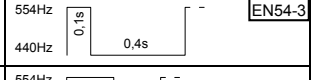
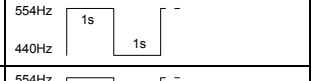
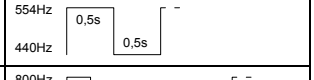
Anhang/ Appendix/ Annexe/ Appendice

„Tonartentabelle“ und „Ansteuerung der Töne“
„Tone table“ and „Selection of the tones“
«Tableau des sons» et «Activation des sons»

Tonartentabelle/ Tone table/ Tableau de sons/ Tabella suoni

Grund-Ton-Nr. (♪)	Beschreibung/ Description/ Descrizione	
1	Kein Ton/ Silence/ Pas de son/ Nessun suono	
2*	Saw tooth, Germany DIN 33404-3 (emergency signal), PFEER PTAP	 EN54-3
9	Slow whoop, fire alarm, UK BS5839-1	
11	Whoop (fast)	
13	Whoop	
15	Slow whoop, evacuation, Netherlands NEN 2575	 EN54-3
16	Slow whoop, evacuation Australia AS2220	
18	Slow whoop, NFPA	
22	Whoop, Australia AS1670, ISO8201	
23	Siren	
24	Siren	
25	Siren	
26	Industrial alarm (Germany)	
27	Sweeping	
29	Sweeping (fast)	
30	Sweeping	
31	Sweeping, France NF C 48-265	
33	Sweeping, UK BS5839-1 (medium sweep)	
34	Sweeping (fast)	
35	Sweeping, UK BS5839-1 (fast sweep)	
36	Sweeping	
43	Sweeping	
44	Sweeping, IMO 3d, Germany KTA3901 evacuation	
45	Sweeping	
46	Sweeping, Finland General Alarm	
52	Continuous	
53	Continuous	

(♪)	Beschreibung/ Description/ Descrizione	
54	Continuous, Finland All Clear	
55	Continuous	
56	Continuous, PFEER (Gasa-larm)	
57	Continuous, UK BS5839-1	
59	Continuous	
60	Continuous	 EN54-3
61	Continuous	
63	Continuous	
65	Continuous, Sweden SS031711 (All Clear)	
66	Continuous	
67	Continuous, Germany KTA3901 (All Clear)	
68	Continuous	
69	Continuous	
71	Continuous	
77	Intermittent	
82	Intermittent, PFEER (General Alarm), UK BS5839-1 (Back-up Alarm)	
83	Intermittent, PFEER (General Alarm)	
88	Intermittent	
90	Intermittent	
91	Intermittent	
92	Intermittent	
93	Intermittent (fast), electrome-chanical horn	
97	Intermittent	
98	Intermittent, Sweden SS 031711 (Imminent Danger)	
100	Intermittent, Industrial Alarm (Germany)	
101	Intermittent, Sweden SS031711 (Important Mes-sage (Pre Mess))	
102	Intermittent, Sweden SS031711 (Local Warning)	
103	Intermittent, Sweden SS031711 (Air Raid)	
104	Intermittent, Sweden SS031711 (Imminent Danger)	EN54-3
107	Intermittent, Germany KTA3901 (evacuation)	
109	Intermittent, Australia AS2220,AS1610, AS1670	
110	Intermittent (fast variable), Bell	
111	Intermittent, ISO8201 (emer-gency evacuation signal), USA (evacuation)	
112	Intermittent, ISO8201 (emer-gency evacuation signal)	
113	Intermittent, ISO8201 (emer-gency evacuation signal) treble tone	

Grund-Ton-Nr. (♪)	Beschreibung/ Description/ Descrizione	
115	Intermittent, IMO (Telephone Call)	
116	Intermittent, IMO (abandon ship)	
117	Intermittent, IMO SOLAS III/50 + SOLAS III/6.4 (General Alarm)	
122	Alternating	
123	Alternating	
124	Alternating, Singapore	
125	Alternating	
128	Alternating	
130	Alternating, UK BS5839-1 (Fire Alarm)	
131	Alternating, UK BS5839-1 (Fire Alarm, Level crossing)	EN54-3 
135	Alternating, UK BS5839-1 (Fire Alarm, increased urgency Level crossing)	
142	Alternating	
143	Alternating, Germany Industrial Alarm	
144	Alternating	
146	Alternating, France NFS 32-001 (fire alarm)	EN54-3 
147	Alternating, Sweden SS031711 (turn out)	
148	Alternating, Sweden SS031711 (turn out)	
152	Alternating-intermittent	

Ansteuerung der Töne/ Selection of the tones/ Activation des sons/ Comando suoni:

Tonartenschalter/ Selector –switch (Einstellung des Grundtones/ Adjusting the base tone)						External Tone Control		
						C1	C2	C1+C2
1	2	3	4	5	6	Grund-Ton No.(♪)	Tone No.	Tone No.	Tone No.
						1	2	88	57
ON						2 *	128	112	57
	ON					2	26	100	93
ON	ON					2	61	131	112
		ON				9	57	11	82
ON		ON				15	131	52	112
	ON	ON				16	109	52	56
ON	ON	ON				18	111	57	68
			ON			22	16	109	68
ON			ON			23	131	52	112
	ON		ON			24	131	52	131
ON	ON		ON			25	131	52	92
		ON	ON			26	2	100	93
ON		ON	ON			27	123	52	92
	ON	ON	ON			29	35	52	61
ON	ON	ON	ON			30	27	52	77
				ON		31	131	52	57
ON				ON		33	30	52	35
	ON			ON		34	35	52	93
ON	ON			ON		35	27	52	110
		ON		ON		36	146	67	57
ON		ON		ON		43	131	52	91
	ON	ON		ON		45	2	57	93
ON	ON	ON		ON		52	15	65	82
			ON	ON		54	46	54	131
ON			ON	ON		55	131	52	128
	ON		ON	ON		56	82	35	33
ON	ON		ON	ON		59	143	59	101
		ON	ON	ON		60	131	52	125
ON		ON	ON	ON		65	131	52	93
	ON	ON	ON	ON		66	110	52	107
ON	ON	ON	ON	ON		69	131	52	110
					ON	71	131	52	93
ON					ON	77	61	52	122
	ON				ON	82	131	52	83
ON	ON				ON	83	56	2	82
		ON			ON	88	2	57	128
ON		ON			ON	90	131	52	125
	ON	ON			ON	91	30	52	110
ON	ON	ON			ON	92	33	52	57
			ON		ON	93	2	128	57
ON			ON		ON	97	2	63	93
	ON		ON		ON	100	131	52	125
ON	ON		ON		ON	101	98	102	65
		ON	ON		ON	103	131	65	147
ON		ON	ON		ON	104	103	65	101
	ON	ON	ON		ON	109	16	52	22
ON	ON	ON	ON		ON	110	131	61	91
				ON	ON	112	2	57	128
ON				ON	ON	113	52	123	104
	ON			ON	ON	115	117	116	44
ON	ON			ON	ON	116	117	93	125
		ON		ON	ON	117	93	116	125
ON		ON		ON	ON	123	27	52	77
	ON	ON		ON	ON	124	53	83	2
ON	ON	ON		ON	ON	130	2	107	67
			ON	ON	ON	131	2	112	57
ON			ON	ON	ON	135	16	56	109
	ON		ON	ON	ON	142	2	54	88
ON	ON		ON	ON	ON	143	59	93	33
		ON	ON	ON	ON	144	110	61	2
ON		ON	ON	ON	ON	146	31	67	57
	ON	ON	ON	ON	ON	148	131	52	92
ON	ON	ON	ON	ON	ON	152	110	61	13

* Werkseinstellung/ Factory setting/ Réglage d'usine
Заводская настройк/ Impostazione di fabbrica

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY
Pfannenberg GmbH
Werner-Witt-Straße 1 · D- 21035 Hamburg
Tel.: +49/ (0)40/ 734 12-0 · Fax: +49/ (0)40/ 734 12-101
service@pfannenberg.com
http://www.pfannenberg.com

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