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Observe proprietary notice in accordance with DIN ISO 16016!

English translation

1. Intended use

Sounders of the PA series are designed for the signaling of e.g. hazardous conditions in industry, trade and construction areas. There is also the possibility of visual signaling when the sounder/flashing light combination (PA X 1-05) is used.
The sounders produce acoustic signals in 80 different tones, which can be selected using an internal switch. The external control can be used to switch over to a maximum of 3 further tones.
The devices must only be operated when undamaged and within the specified parameters. The function of the device can only be guaranteed if the upper and lower parts are correctly joined together.
The devices are designed for indoor and outdoor use.

2. Scope of delivery

The scope of delivery consists of:
1x Signaling device
1x Diaphragm nipple M20
1x Quick guide
1x Resistor (only for –SSM versions)

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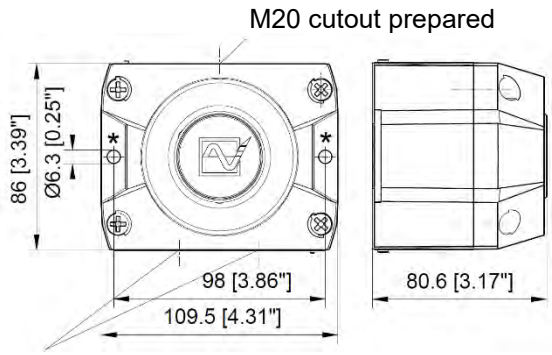
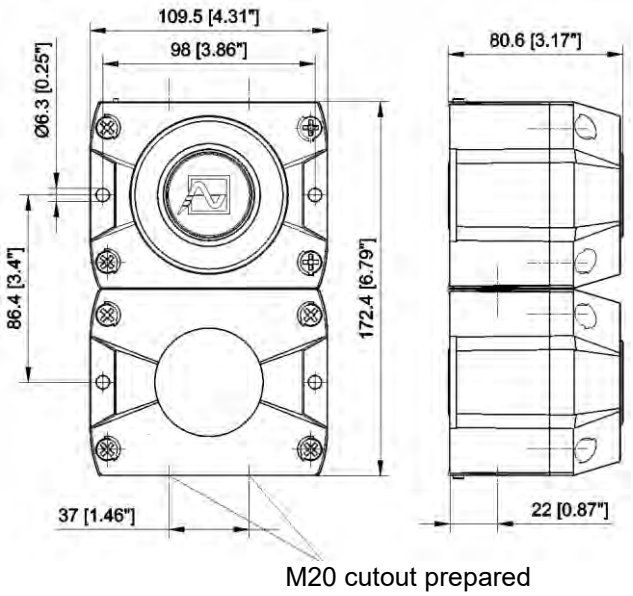
3. Dimensions

PA 1

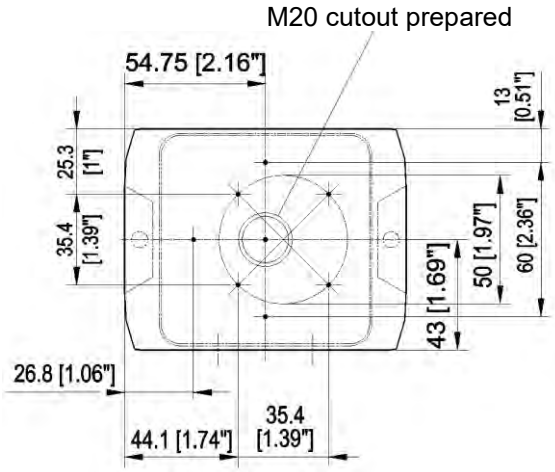


* M6 screw max., tightening torque 4 Nm

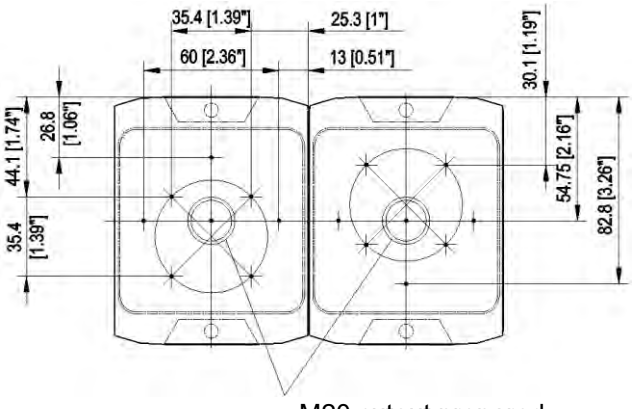
PA X 1-05



Drilling pattern inside the housing (PA 1)



Drilling pattern inside the housing (PA X 1-05)



4. Technical data

4.1 General

	PA 1	PA X 1-05
Max. sound level	105 dB (A) 1m	
Volume control	max. -12dB	
Tones	80	
Flash energy	-	5 J
Flash frequency	-	1 Hz
Duty cycle	100%	
Connecting terminals	0.14 - 2.5mm² fine stranded / AWG24 - AWG 14	
Ingress protection	IP 66 (EN 60529), Type 4 & 4x	
Impact strength	IK08 (EN 50102)	
Protection class	II ⧈ double insulated equipment	

Operating temperature	-40 °C…+55 °C	
Storage temperature	-40 °C…+70 °C	
Max. rel. air humidity	90%	
Cable inlet	4x M20 pre-embossed	5x M20 pre-embossed
Sealing range of the feed-through grommet	7 – 13 mm	A cable gland with a sufficient degree of protection must be provided when cable diameters of < 7 mm are used.
Housing material	PC/ ABS Blend	
Lens material	PC	
Installation position	any	
Lens colors		transparent, white, yellow, amber, red, green, blue

4.2 Electrical data AC

	PA 1				PA X 1-05		
Rated voltage (See approvals for limit values)	24 V 50/60 Hz	48 V 50/60 Hz	115 V 50/60 Hz	230 V 50/60 Hz	24 V 50/60 Hz	115 V 50/60 Hz	230 V 50/60 Hz
Voltage range	18 – 30 V	44 – 52 V	95 – 127 V	195 –253 V	18 – 30V	95 – 127V	195 – 253V
Sounder current consumption (max)	150 mA	150 mA	30 mA	16 mA	150 mA	30 mA	16 mA
Flashing light current consumption (max)	-	-	-	-	800 mA	120 mA	90 mA
Power consumption	4.5 VA	9 VA	4.5 VA	4.5 VA	34.5 VA	18.5 VA	25 VA

4.3 Electrical data DC

	PA 1		PA X 1-05		
Rated voltage (See approvals for limit values)	24 V or 12 – 48 V	120 V DC	12 V	24 V	48 V
Voltage range	10 – 57 V	108 – 132 V	10 – 15 V	18 – 30 V	40 – 57 V
Sounder current consumption (max)	80 mA	30 mA	25 mA	70 mA	80 mA
Flashing light current consumption (max)	-		700 mA	360 mA	170 mA
Power consumption	12 – 48 V: 4 W 24 V: 2 W	3.6 W	8 W	11.5 W	11.5 W

5. Approvals

(Approvals are valid for marked devices)

Construction Product Regulation (CPR) (305/2011/EU)

CE 12
0786

UK CA 22
0843

PA 1: DoP-No.: 03CPR2013-06-07 **PA X 1-05:** DoP-No.: 05CPR2013-06-07

	PA 1	**PA X 1-05**	
Options	–SSM (24V DC)		
Rated voltage	24 – 48 V DC	24V DC	48V DC
Voltage range in accordance with EN54-3, EN54-23	18 V – 57 V Option: -SSM (18 V – 30 V)	18 - 30V	40 - 57V
Flashing light lens color	-	red, clear	
Tone 2 15 60 104 131 146	compliant with the Construction Product Regulation (CPR) (305/2011/EU 1200Hz-500Hz (Sawtooth) DIN/PFEER P.T.A.P. 500Hz-1200Hz (Slow whoop) 825Hz (Continuous tone) 660Hz (Interrupted tone) 800Hz/ 1000Hz (Alternating tone) 544Hz/ 440Hz (NF S 32-001)		
Coverage volume	EN54-3: see document 30303-005-1	EN 54-23 category O: see document 30303-005-1	
Environmental protection class	Type B		
Installation position	any	see document 30303-005-1	
The test was performed using the supplied diaphragm nipple and the outer mounting bores.			

VdS	**PA 1**	**PA X 1-05**
	G 212115	**G 212188**
	See Construction Product Regulation (CPR) (305/2011/EU) for data	

DNV	TAA00001R0
MED	MEDB00002BH
MER	MERB00002BH

CNBOP	**3558/2019**	**3560/2019**

UL, cUL

S7256

	Rated Voltage	Audible-signal Appliance Fire Alarm Equipment ULSZ, ULSZ7	Audible and Visual signal Appliance General Signal Equipment UCST, UCST7 and UEES, UEES7
PA 1	24V – 48V DC (Fire Alarm Equipment) 12V – 48V DC (General Signal Equipment)	x Special application, limited operating voltage range 18 – 57 V DC	x
PA 1 **PA X 1-05**	24V AC 115V AC 230V AC	--	x
PA X 1-05	12V DC 24V DC 48V DC	--	x

No approvals for PA1, 48V AC.

PATROL sounders and combined units **PA 1/ PA X 1-05** comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

UL/ cUL specifications:

Suitable for indoor and outdoor use. Signaling area: see document 30303-005-1.

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.

According to CSA-C22.2 No. 205-M1983 clause 4.3.4 the connection is limited to max. three leads.

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)

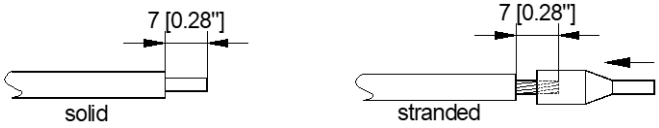
cUL directional characteristics for the horn:

AXIS	ANGLE	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)]:

Type	**Voltage**	**UL 464 dB(A) at 10 ft ++**	**CAN/ULc-S525-07**
PA 1-24 DC	18V DC	77.1 (for tone 113)	86.2 (for tone 60)
Tone no. 2, 15, 60, 104, 131, 146, 111, 112, and 113 was used for this test.			

Connecting cables:



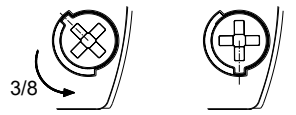
6. Commissioning

6.1 Safety information

⚠	**DANGER - Danger to life due to electric shock** Voltage-carrying devices and exposed connection cables may cause electric shocks and serious accidents. ➢ Only trained and authorized electricians may work on electrical connections. ➢ Disconnect all supply lines from mains before installation and secure them against reconnection. Always ensure absence of voltage. ➢ Wait for the discharge phase of 5 minutes for the electrical components. The device should only be opened afterwards. ➢ The operating voltage must only be applied when the housing is firmly closed.
⚠	**WARNING - Danger due to unauthorized use of the devices** Improper use may lead to serious accidents. ➢ Ensure that the connection cable is protected against pulling and twisting during installation. The devices are only intended for fixed installation. To ensure long-term function: ➢ Do not mount the sound projector pointing upwards in dusty environments or outdoors.
⚠	**DANGER - Danger due to damage to the devices** **Non-compliance with the information on the type plate can lead to serious accidents.** ➢ Always observe the information on the type plate when installing and maintaining the devices.
⚠	**CAUTION - Risk of injury due to sharp edges or heated components** ➢ Wear suitable personal protective equipment (PPE) for installation, assembly or service/maintenance work. ➢ Lay wires well away from sharp edges, corners and internal components; avoid collisions with parts.
⚠	**CAUTION - Risk of hearing impairment** ➢ Wear sound insulation equipment during work/testing to prevent hearing impairment. ➢ Unexpected triggering of the sound can lead to startled reactions. **CAUTION - Impairment of vision** When using the sounder/flashing light combination: ➢ Avoid constant, direct glances into the activated lights to prevent impairment of vision. ➢ Unexpected triggering of the flash can lead to startled reactions.

Opening the housing

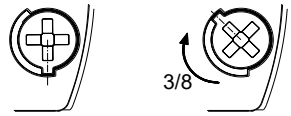
1. 2.



The upper part can be detached by loosening the four cover screws

Closing the housing

1. 2.



Close the housing by turning the cover screws to the end position until they lock in place.

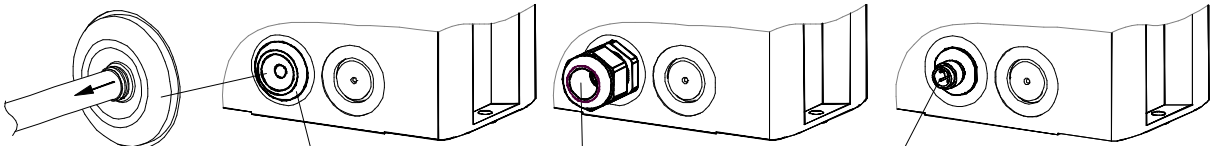
The device is delivered in an unsealed condition.
Sealing plugs for the housing screws are available as accessories.

Cable feed-throughs

The supplied diaphragm nipple can be replaced by a cable gland or by an M12 plug-in connector with a flange dimension of M20.

➢ Only cable glands with a degree of protection of at least IP66 should be fitted to the corresponding openings.

Cable diameters of <7 mm require a cable gland with a sufficient degree of protection.



IP 66 only with the diaphragm funnel pointing outwards.

Remove the remains of the diaphragm after the cable has been fitted.

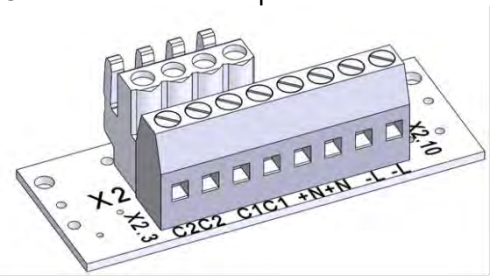
Diaphragm nipple IP 66 (supplied)

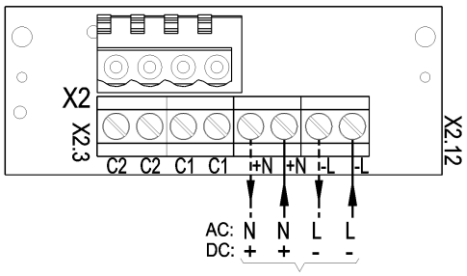
Cable gland IP 66 (option)

M12 plug-in connector IP 66, for low-voltage devices (option)

6.2 Electrical connection PA 1

Circuit board in lower part:

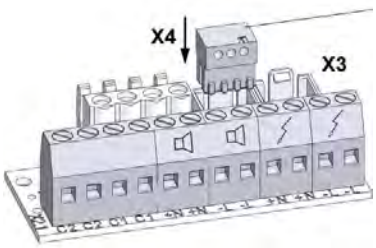




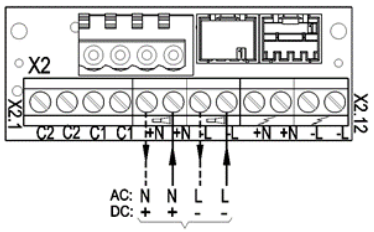
Operating voltage connection

6.3 Electrical connection PA X 1-05

Common connection of flashing light and sounder (Factory setting)

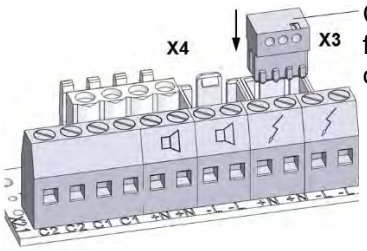


Connector from flashing light circuit board

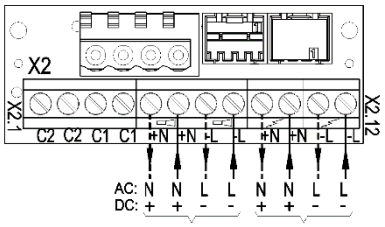


Operating voltage connection

Separate connection of flashing light and sounder



Connector from flashing light circuit board



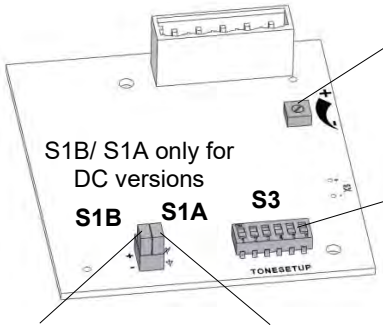
Operating voltage connection for sounder

Operating voltage connection for flashing light

7. Tone settings (on the driver board in the upper part)

The desired tone can be selected using the tone selector switch **S3** (on the driver board in the upper part). The possible tones are described in the tone type table in the Annex.
The tone is generated after the supply voltage is applied.

DC version and 48 V AC

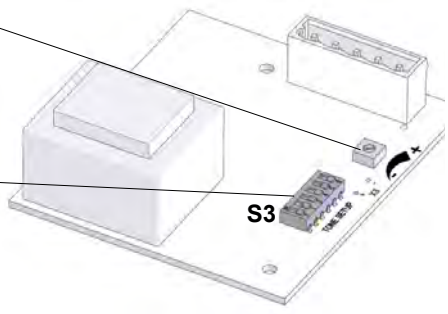


Volume control
Note:
The volume control must be in the maximum position in order to conform to EN54-3.

Tone selector switch **S3**

S1B S1A	Diode not bridged Polarity negative **Factory setting**
S1B S1A	Diode not bridged Polarity positive
S1B S1A	Diode bridged Polarity negative
S1B S1A	Diode bridged Polarity positive

AC version



S1B (only DC)
Selection of control voltage polarity for C1 and C2

S1A (only DC)
Bridging of the reverse polarity diode

7.1 Changing the tones by external control

It is possible to obtain up to three additional tone types using the following electrical controls for applications that require additional tones in addition to the base tone.
The desired base tone (♪, see tone type table in the Annex) is always set first with the tone selector switch **S3** on the driver board. The corresponding additional tones (C1, C2, C1+C2) can be found in the "Control of tones" table in the Annex.

7.1.1 Stage selection via control input (TAS), AC and DC versions

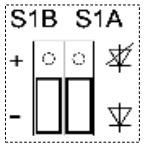
DC version:

Note: Always apply the supply voltage together with the control inputs.

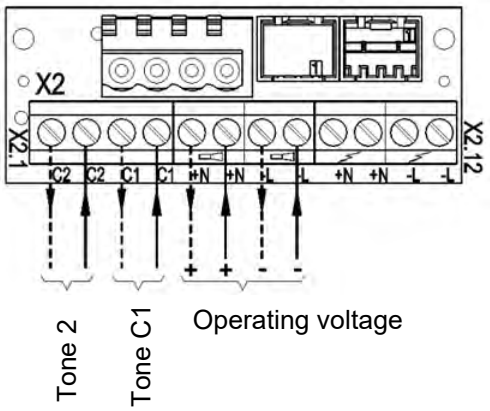
Caution: If the control voltage is higher than the supply voltage or the supply voltage is not present at all, the operating current will be supplied via the control inputs. A corresponding carrying capacity has to then be ensured.

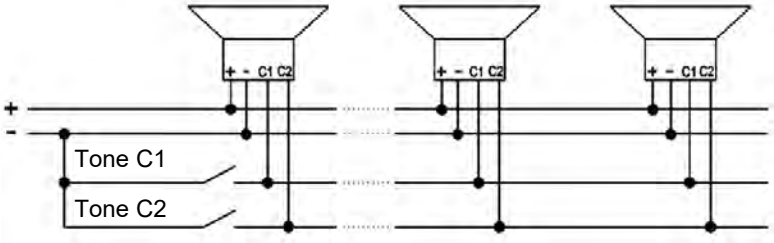
Negative control: (Factory setting)
Switch setting should be as follows:

- **S1A** to ⏚ (diode not bridged)
- Changeover switch **S1B** to "**–**"



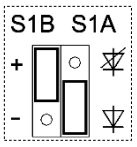
(on the driver board)



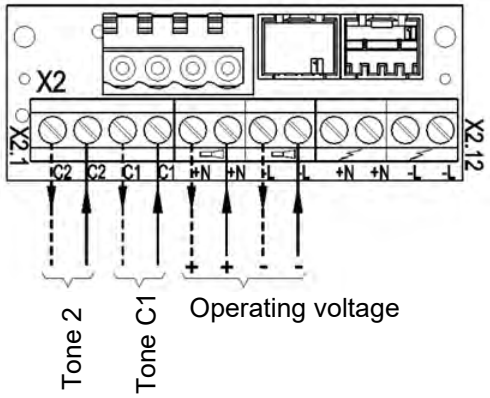


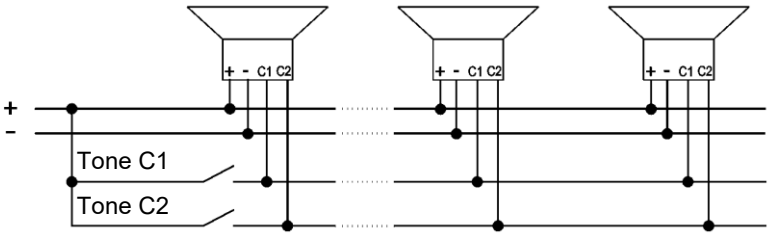
Positive control:
Switch setting should be as follows:

- **S1A** to ⏚ (diode not bridged)
- Changeover switch **S1B** to "**+**" (positive control)



(on the driver board)



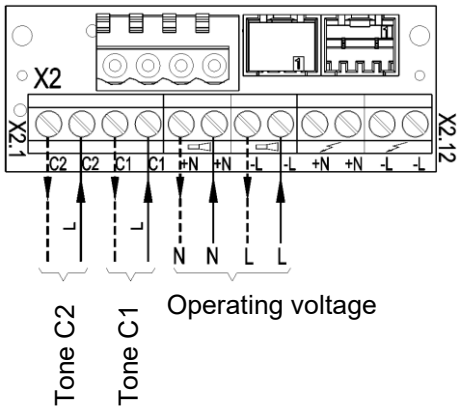


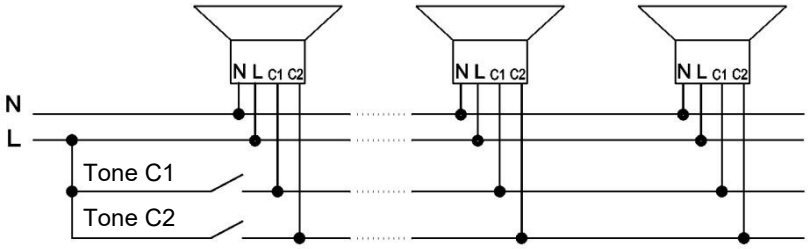
AC version:

Note: Always apply the supply voltage together with the control inputs.

24 V AC/ 115/ 230 V AC: Apply phase "**L**" of the supply voltage to the control inputs C1 / C2.

Only 48 V AC: Apply "**N**" of the supply voltage to the control inputs C1 / C2.





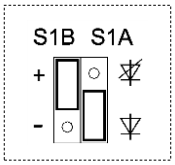
7.1.2 Stage selection by supply via control input (TAV) – all DC versions

Note: Only applicable to DC version!

The sounder can be supplied with operating voltage via the control inputs C1 / C2 on the connection board. Supply and stage selection therefore take place simultaneously.

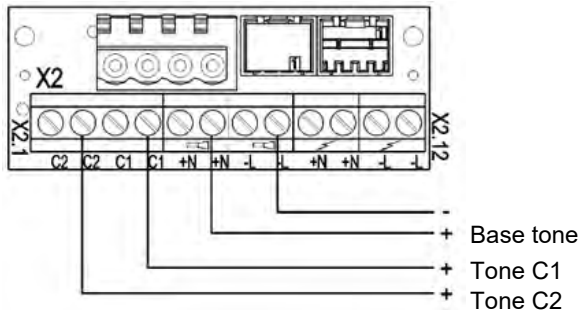
Switch setting should be as follows:

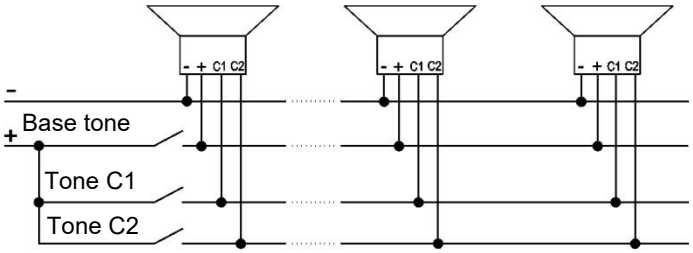
- **S1A** to ⏚ (diode not bridged)
- Changeover switch **S1B** to "**+**"

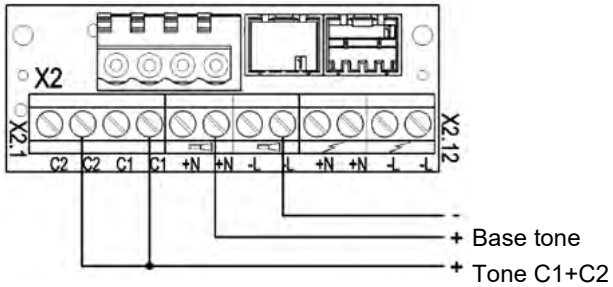


(on the driver board)

- Connect the negative terminal on the connection board.
- Connect the positive terminal on the connection board. The basic tone (♪) is generated.
- Connection of the positive voltage to C1 on the connection board generates tone C1.
- Connection of the positive voltage to C2 on the connection board generates tone C2.
- Simultaneous connection of the positive voltage to C1 and C2 on the connection board generates tone "C1+C2".





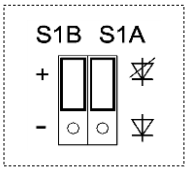


7.1.3 Stage selection by reverse polarity (TAR) - all DC versions (except option –SSM)

Note: Only applicable to DC version!
Not applicable to –SSM versions!
The control inputs C1 and C2 must not be connected on the connection board!

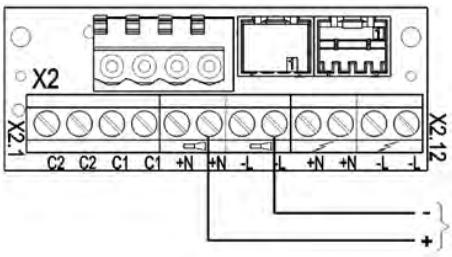
Switch setting should be as follows:

- **S1A** to ⏚ (diode bridged)
- and changeover switch **S1B** to "+"

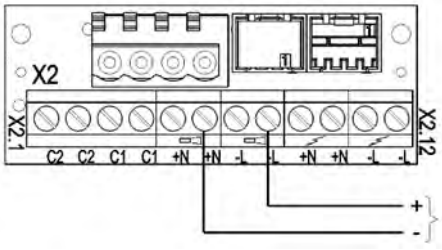


(on the driver board)

Tone "C1+C2" can also be selected by reversing the polarity of the operating voltage to the basic tone (♪):



Base tone



Tone "C1+C2"

8. Option

–SSM (soft-start module, only 24V DC)

The inrush current peak is limited to:

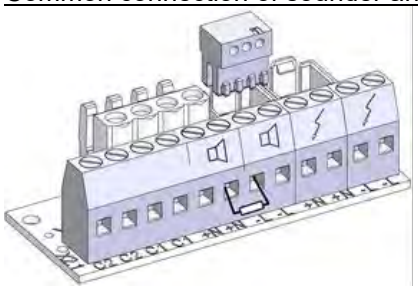
: max. 2.1 A	: max. 2.1 A

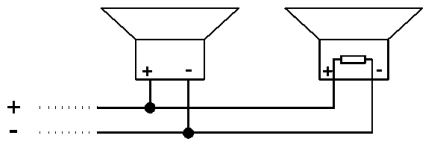
The operating voltage is only switched through to the operating equipment from >7 V.
Operating voltage range: 18 V – 30 V DC

Positioning of the resistor (1kOhm) is as follows:

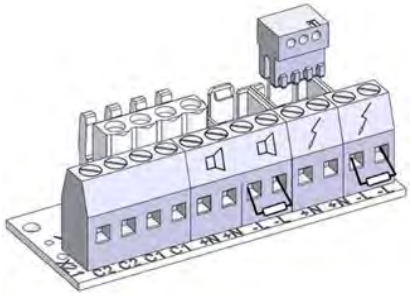
- Always mount the resistor for line monitoring in the last device.
- See below for the position of the second resistor if the sounder and flashing light are connected separately.
- Remove any resistors that are not required.

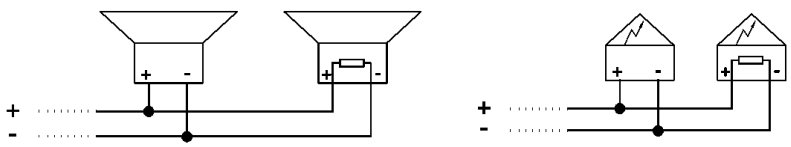
Common connection of sounder and flashing light:





Separate connection of sounder and flashing light:





9. Accessories

Item No.	Designation
28300000002	Sealing plug, 4-pack
28912000000	Spare locking bolt, 4-pack
28300000004	Surface seal
28300000007	Control panel mounting kit PA 1

10. Maintenance, service, repairs

- Observe the Safety information during all work on the device.

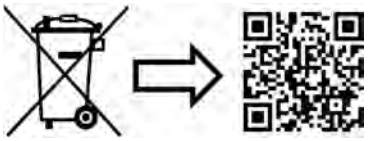
The device requires no special maintenance.

- Do not use abrasive, solvent-containing or chemically aggressive cleaners for cleaning the outside.
  Do not use sharp tools for cleaning and especially avoid scratching the lens.
  Do not clean with high pressure.
- Only replace components using original spare parts.
- Only have repairs carried out at the manufacturer's premises.

Conversions, modifications, improper and impermissible use as well as failure to observe the notes in these operating instructions shall void any warranty.

11. Decommissioning, dismantling and disposal

- Observe the Safety information during all work on the device.



www.pfannenberg.com/disposal

EU

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

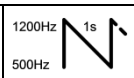
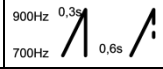
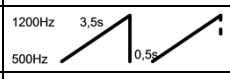
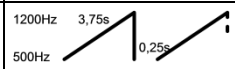
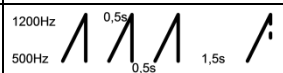
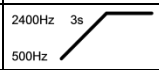
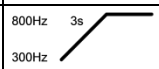
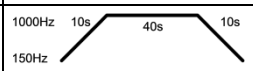
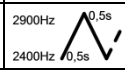
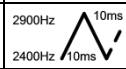
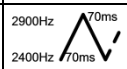
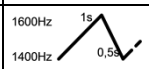
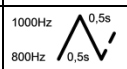
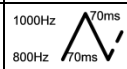
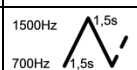
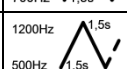
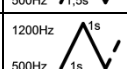
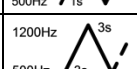
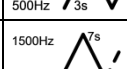
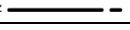
Pfannenberg GmbH
Werner-Witt-Straße 1
D- 21035 Hamburg
Tel.: +49/ (0)40/ 734 12-0
Fax: +49/ (0)40/ 734 12-101
service@pfannenberg.com
http://www.pfannenberg.com

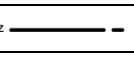
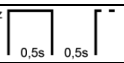
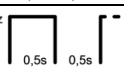
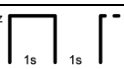
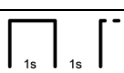
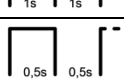
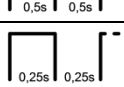
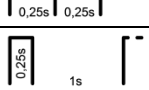
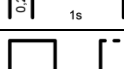
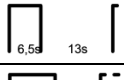
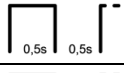
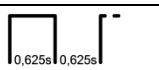
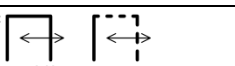
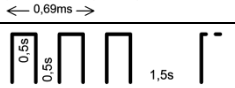
UK

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

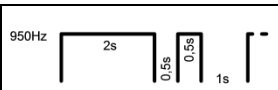
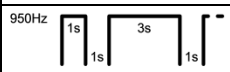
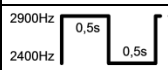
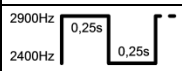
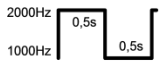
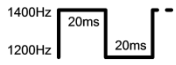
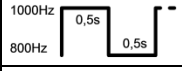
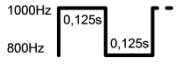
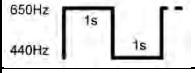
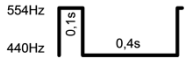
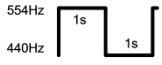
Pfannenberg (UK) Ltd.
Unit 6C, Aspen Court, Bessemer Way
Centurion Business Park
S60 1FB Templeborough Rotherham
Tel. +44 1709 364844
Fax: +44 1709 364211
Email: info@pfannenberg.co.uk
http://www.pfannenberg.com

Tonartentabelle/ Tone table/ Tableau de sons/ Tabella suoni/ „Таблица звуковых тонов“

Grund-Ton-Nr. (♪)	Beschreibung/ Description/ Descrizione/ Описание	
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	
54	Continuous, Finland All Clear	
55	Continuous	

(♪)	Beschreibung/ Description/ Descrizione/ Описание	
56	Continuous, PFEER (Gasalarm)	
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), electromechanical horn	
97	Intermittent	
98	Intermittent, Sweden SS 031711 (Imminent Danger)	
100	Intermittent, Industrial Alarm (Germany)	
101	Intermittent, Sweden SS031711 (Important Message (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 (emergency evacuation signal), USA (evacuation)	
112	Intermittent, ISO8201 (emergency evacuation signal)	
113	Intermittent, ISO8201 (emergency evacuation signal) treble tone	

Anhang/ Appendix/ Annexe/ Appendice/ Приложение

Grund-Ton-Nr. (♪)	Beschreibung/ Description/ Descrizione/ Описание	
115	Intermittent, IMO (Telefon 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/ Controllo dei toni / Управление звуко-выми тонами

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

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.
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/ Impostazione di fabbrica/ Заводская настройка

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