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Annex tones table

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-signal lamp combination (PA L 1-R) is used.

The sounders produce acoustic signals in 70 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 suitable for indoor and outdoor use.

2. Scope of delivery

The scope of delivery consists of:

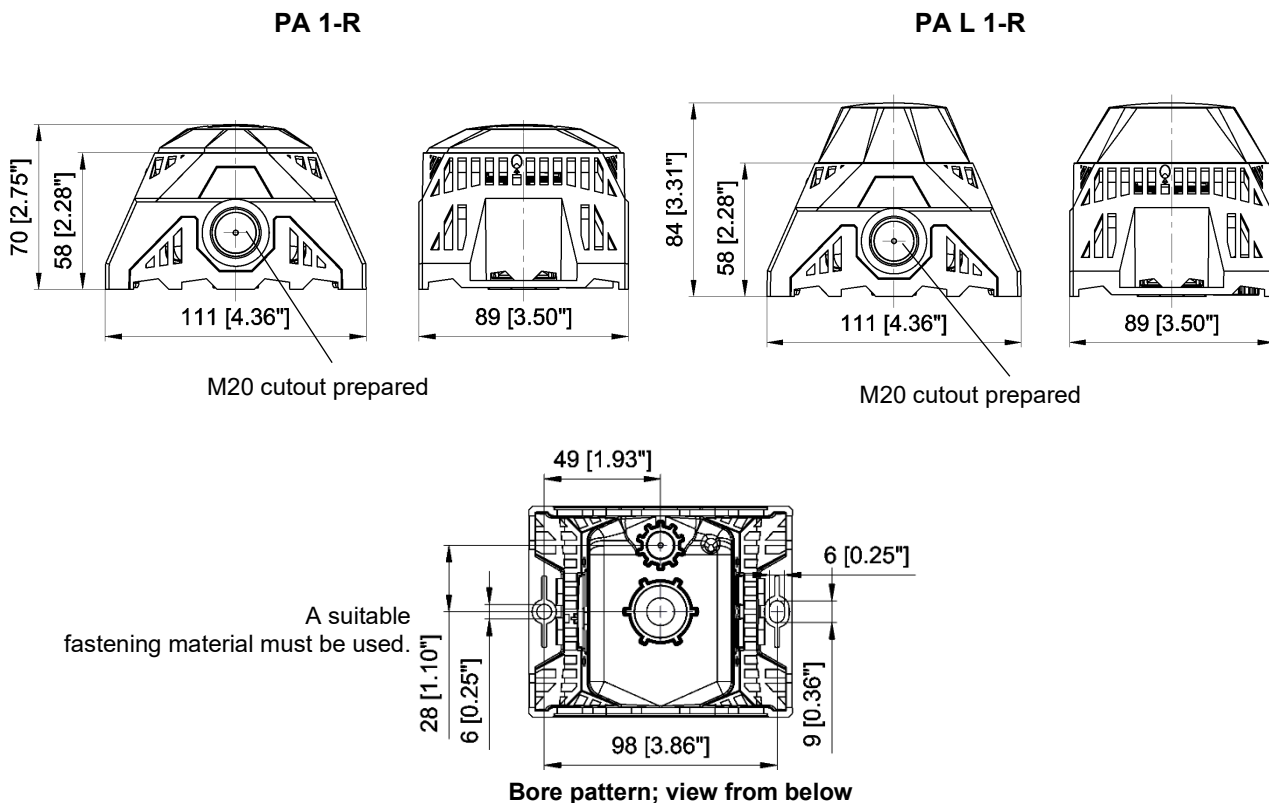
1x Signaling device

1x Diaphragm nipple M20 (*Optional: Cable gland - M12 plug*)

1x Seal for lower cable feed-through

1x Quick guide

3. Dimensions



4. Technical data

4.1 General

	PA 1-R	PA L 1-R
Light intensity	-	16 cd (transparent)
Light source	-	20x RGBW
Colors RGBW-LED	-	blue, red, green, yellow, orange, violet, magenta additionally via external control: white
Max. sound level	105 dB (A) @1m, DIN-tone (tone no. 2)	
Volume control	max. - 20 dB	
Tones	70	
Duty cycle	100 %	
Connecting terminals	0.14 - 1.5mm ² fine stranded / solid / AWG24 - AWG 14	
Protection category	IP 66 (EN 60529), Type 4 & 4x	
Impact strength	IK08	IK07
Protection class	II	
Operating temperature	-25 °C...+50 °C (UL approval, see page 3, English chapter)	
Storage temperature	-25 °C...+70 °C	
Max. rel. air humidity	90 %	
Cable inlet	1x M20 preshaped, 1x 10mm preshaped	
Sealing range of the feed-through grommet	7 – 13 mm	A cable gland with sufficient protection category must be provided when cable diameters of < 7 mm are used.
Housing material	PC / ABS	
Lens material	PC/ABS	PC Macrolon
Installation attitude	any	
Lens colors	--	transparent, white, yellow, amber, red, green, blue RGBW version: white

4.2 Electrical data AC version/DC version

	PA L 1-R						
Rated voltage range (see license for limit)	12V - 48V DC			24V - 48V AC 50/60 Hz		115V - 230V AC 50/60 Hz	
Operation voltage range	10V - 60V DC			18V - 53V AC		95V - 253V AC	
	12V DC	24V DC	48V DC	24V AC	48V AC	115V AC	230V AC
Rated current consumption of light (max)	173mA	90mA	58mA	165mA	110mA	46mA	32mA
Rated current consumption of sounder (max)	101mA	56mA	41mA	103mA	71mA	26mA	19mA
Rated current consumption combined (max)	258mA	129mA	77mA	208mA	144mA	55mA	38mA
Power consumption combined (max)	3,1W	3,1W	3,7W	4,9VA	6,9VA	6,3VA	8,7VA
	PA 1-R						
Rated voltage range (see license for limit)	12V - 48V DC			24V - 48V AC 50/60 Hz		115V - 230V AC 50/60 Hz	
Operation voltage range	10V - 60V DC			18V - 53V AC		95V - 253V AC	
	12V DC	24V DC	48V DC	24V AC	48V AC	115V AC	230V AC
Rated current consumption of sounder (max)	101mA	56mA	41mA	103mA	71mA	26mA	19mA
Power consumption sounder (max)	1,2W	1,3W	1,9W	2,5VA	3,4VA	2,9VA	4,3VA

5. Approvals

(Approvals are valid for marked devices)

UL, cUL

In preparation

6. Commissioning

6.1 Safety information



DANGER - Danger to life due to electric shock

Voltage-carrying units 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 unit 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 assembly.



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 units.



CAUTION - Risk of injury due to sharp edges or heated components

- Wear suitable personal protective equipment (PPE) for installation, assembly or service/maintenance work.
- Keep wiring away from sharp edges, corners and internal components; avoid collisions with component parts.



CAUTION - Risk of sight impairment

- Avoid constant, direct glances into the activated lights to prevent impairment of vision.
- Unexpected triggering of the flash can lead to startled reactions.

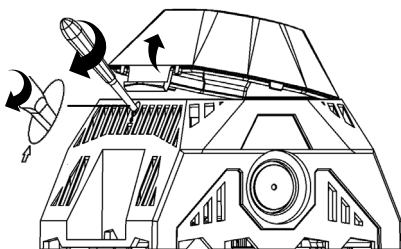


CAUTION - Risk of hearing impairment

- Wear sound insulation equipment during work/testing to prevent hearing impairment.
- Unexpected triggering of the sound can lead to startled reactions.

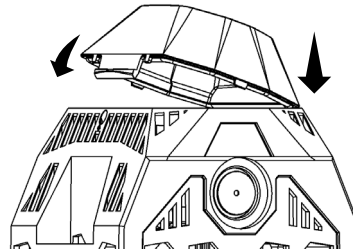
6.1 Lens cap

Opening the lens



Insert a screwdriver (3 mm blade width) in the marked opening and lever out the lid by turning 90°.

Closing the lens



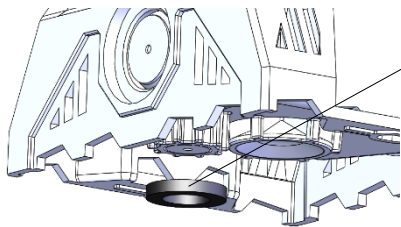
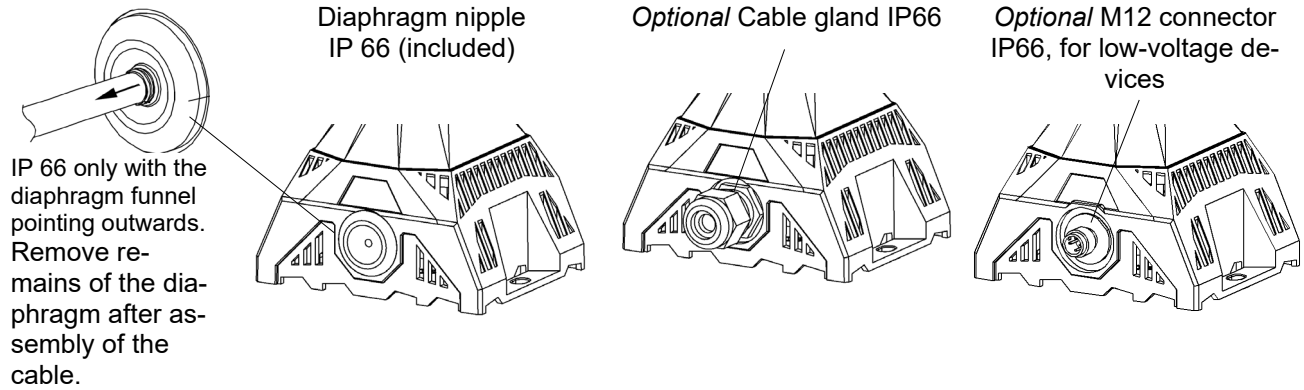
Place the lens on the housing (pay attention to anti-twist protection) and close with slight pressure.

The device is delivered in an unsealed condition.

Cable feed-throughs

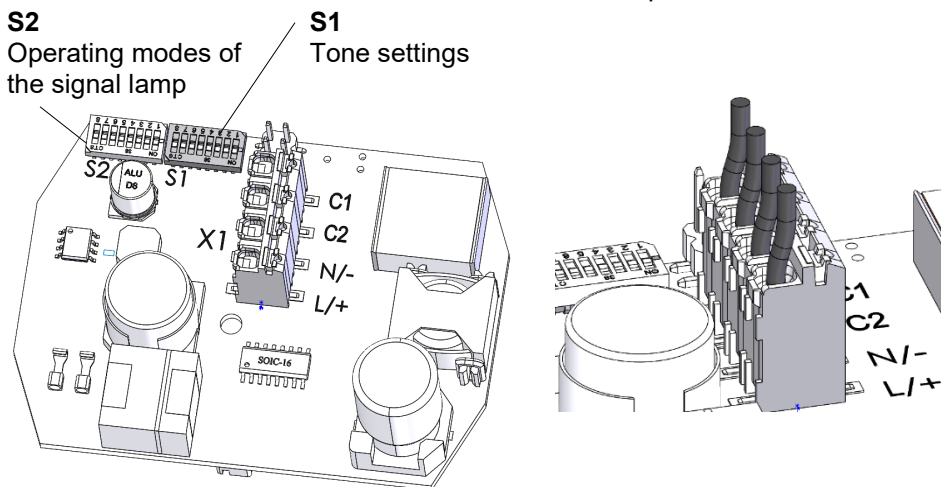
The supplied diaphragm nipple can be replaced by a cable gland or by an M12 plug-in connector with a flange dimension of M20.

➤ Only cable glands with protection category of at least IP66 should be fitted to the corresponding openings. Cable diameters of <7 mm require a cable gland with appropriate protection category.

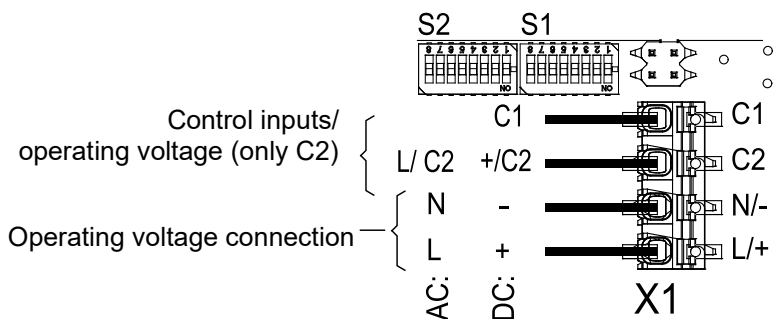


6.2 Electrical connection/control elements PA 1-R / PA L 1-R

The electrical connection is made on the board in the top section/in the lens.



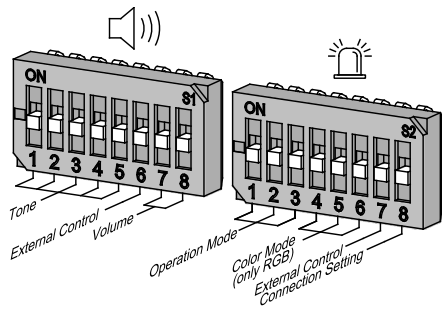
The connecting wires are inserted into the openings provided by the push-in principle.



6.3 Connecting the operating voltage

Signal lamp and sounder can be supplied together or separately in the PA L 1-R combi-device.

Set the DIP switch S2 on the board as follows:

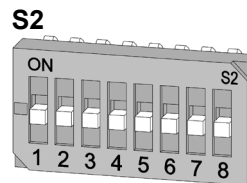
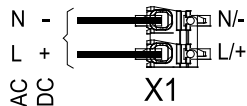


Further information in the QuickGuide

PA 1-R:

Connection of the operating voltage

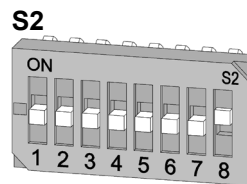
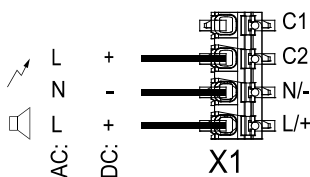
PA L 1-R: Common supply of signal lamp and sounder



S2: all switches to OFF
Factory setting*

PA L 1-R:

Separate supply of signal lamp and sounder



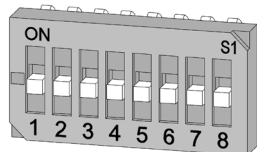
S2: Switch 8 to ON

6.4 Setting the operating modes without external control

6.4.1 Setting the tones

The tone is set using the **S1** switch on the board in the lens, see table below.

S1



Factory setting*

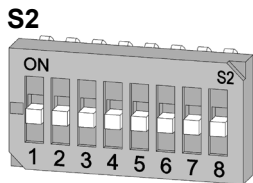
S1 (DIP1)		Volume
7	8	dB
		max.*
ON		-7
	ON	-13
ON	ON	-20

Factory setting*

Without external control					
S1:6 OFF					
1	2	3	4	5	Tone
					162*
ON					2
	ON				9
ON	ON				15
		ON			18
ON		ON			22
	ON	ON			24
ON	ON	ON			26
			ON		27
ON			ON		29
	ON		ON		36
ON	ON		ON		54
		ON	ON		56
ON		ON	ON		60
	ON	ON	ON		63
ON	ON	ON	ON		71
				ON	82
ON				ON	83
	ON			ON	100
ON	ON			ON	102
		ON		ON	103
ON		ON		ON	104
	ON	ON		ON	112
ON	ON	ON		ON	123
			ON	ON	130
ON			ON	ON	131
	ON		ON	ON	146
ON	ON		ON	ON	160
		ON	ON	ON	161
ON		ON	ON	ON	163
	ON	ON	ON	ON	164
ON	ON	ON	ON	ON	1

6.4.2 Setting the color (only PA L 1-R)

The color is set using the **S2** switch on the board in the lens, see table below.

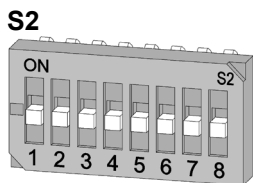


Factory setting*

S2 (DIP2)					Color mode (only RGB)
4	5	6	7	8	
			OFF		Red*
ON				Yellow	
	ON			Orange	
ON	ON			White	
		ON		Green	
ON		ON		Blue	
	ON	ON		Violet	
ON	ON	ON		Magenta	

6.4.3 Setting the operating mode (only PA L 1-R)

The operating mode is set using the **S2** switch on the board in the lens, see table below.



Factory setting*

S2 (DIP2)			Operating mode
1	2	3	
			Flashing light 1Hz*
ON			Flashing light 2 Hz
	ON		Flashing light 1Hz DF**
ON	ON		Blinking light 0.5 Hz
		ON	Blinking light 1Hz
ON		ON	Blinking light 2Hz
	ON	ON	Continuous light
ON	ON	ON	Rotating light 180 rpm

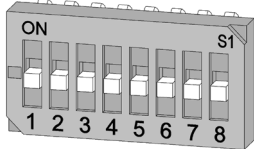
DF** = DoubleFlash

6.5 Setting the operating modes with external control

6.5.1 Setting the tones

The tone is set using the **S1** switch on the board in the lens, see table below.

S1



Factory setting*

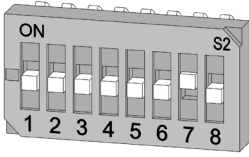
S1 (DIP1)		Volume
7	8	dB
		max.*
ON		-7
	ON	-13
ON	ON	-20

Factory setting*

With external control								
S1 (DIP1)					$\overline{C1+C2}$ (not active)	C1	C2	C1+C2
1	2	3	4	5	S1:6 ON			
					Tone	Tone	Tone	Tone
					162	124	54	83
ON					2	128	112	57
	ON				9	57	11	82
ON	ON				15	131	52	112
		ON			18	111	57	68
ON		ON			22	16	109	68
	ON	ON			1	1	1	131
ON	ON	ON			1	1	100	83
			ON		27	123	52	82
ON			ON		29	35	52	61
	ON		ON		36	146	67	57
ON	ON		ON		54	46	54	122
		ON	ON		56	82	35	33
ON		ON	ON		60	131	52	125
	ON	ON	ON		63	43	69	30
ON	ON	ON	ON		71	131	52	93
				ON	82	131	52	83
ON				ON	83	56	13	82
	ON			ON	100	131	52	125
ON	ON			ON	102	59	66	34
		ON		ON	103	131	65	147
ON		ON		ON	104	103	65	101
	ON	ON		ON	112	2	57	128
ON	ON	ON		ON	123	27	52	77
			ON	ON	130	2	107	67
ON			ON	ON	131	23	112	57
	ON		ON	ON	146	31	66	57
ON	ON		ON	ON	160	82	35	33
		ON	ON	ON	161	143	90	25
ON		ON	ON	ON	163	55	91	44
	ON	ON	ON	ON	164	53	152	45
ON	ON	ON	ON	ON	1	2	88	57

6.5.2 Setting the color (only PA L 1-R)

The color is set using the **S2** switch on the board in the lens, see table below.

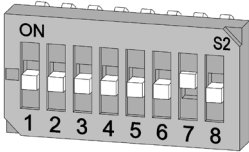


S2 (DIP2)								Light - colors (only PA L 1-R)			
1	2	3	4	5	6	7	8	$\overline{C1+C2}$ (not active)	C1	C2	C1 + C2
								Red	Green	Blue	Yellow
			ON					Yellow	Red	Green	White
			ON	ON				Orange	Red	Green	Blue
			ON			ON		White	Yellow	Green	Red
			ON			ON		Green	Red	Yellow	Blue
			ON	ON		ON		Blue	Orange	Red	Green
			ON	ON	ON			Green	Yellow	Red	Red
			ON	ON	ON			Magenta	Red	Green	Yellow

6.5.3 Setting the operating mode (only PA L 1-R)

The light mode is set using the **S2** switch on the board in the lens, see table below.

S2



S2 (DIP2)								Light - operating mode (only PA L 1-R)			
1	2	3	4	5	6	7	8	$\overline{C1+C2}$ (not active)	C1	C2	C1 + C2
								Standby	Flashing light 1Hz	Continuous light	Blinking light 1Hz
ON								Flashing light 1Hz	Blinking light 1Hz		Continuous light
	ON							Flashing light 2 Hz	Continuous light		Blinking light 1Hz
ON	ON							Continuous light	Continuous light		Flashing light 1Hz DF**
		ON						Blinking light 1Hz	Flashing light 1Hz		Rotating light 60 rpm
ON		ON						Blinking light 2Hz	Flashing light 1Hz DF**		Flashing light 1Hz
	ON	ON						Continuous light	Continuous light		Continuous light
ON	ON	ON						Rotating light 180 rpm	Continuous light		Blinking light 1Hz

DF**=Double Flash

7. Setting types examples

Green Red Yellow - Color of lamp

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1	ON	ON	ON	ON	ON	ON	Volume		Continuous	Continuous Tone 2	Continuous Tone 88	/	Classic Traffic light, optional with tone
S2	ON	ON				ON							

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1	ON	ON	ON	ON	ON	ON	Volume		Continuous	/	/	Flash 1Hz DF Tone 57	Good / Bad "Inform" light optional with tone
S2	ON	ON			ON	ON							

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1	ON	ON	ON	ON	ON	ON	Volume		Continuous	Continuous Tone 2	/	Flash 1Hz DF Tone 57	Traffic light with higher attention, optional with tone
S2	ON	ON			ON	ON							

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1		ON	ON			ON	Volume		Standby	Flash 1Hz	Continuous	/	OK / Warning light with higher attention
S2				ON	ON								

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1		ON	ON			ON	Volume		Standby	/	Continuous	Blink 1Hz	OK / Warning light with higher attention
S2				ON	ON	ON							

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1	ON	ON	ON	ON	ON	ON	Volume		Continuous	/	Continuous Tone 88	/	OK / Warning light optional with tone
S2	ON	ON				ON							

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1	ON	ON	ON			ON	Volume		Continuous	Continuous	/	Flash 1Hz DF Tone 83	Traffic light with higher attention optional w/ tone
S2	ON	ON			ON	ON							

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1		ON	ON			ON	Volume		/	Continuous	Continuous	Blink Tone 131	Traffic light with higher attention optional w/ tone
S2		ON		ON	ON								

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1		ON	ON			ON	Volume		/	Continuous	/	Blink Tone 131	2-Level warning w/ tone for higher attention
S2		ON		ON	ON								

	1	2	3	4	5	6	7	8	C1+C2 (not active)	C1	C2	C1+C2	Description
S1		ON	ON			ON	Volume		/	Blink	Continuous	/	2-Level warning
S2	ON					ON							

8. Accessories

Item No.	Designation
28912000001	Spare seal PA (L) 1-R

9. Maintenance, service, repairs

- Observe the [Safety](#) information during all work on the device.

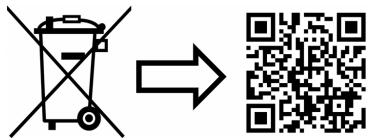
The device requires no special maintenance.

- Do not use abrasive, solvent-containing or chemically aggressive cleaners for cleaning the outside.
Do not use sharp tools; 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 this operating instructions shall void any warranty.

10. Decommissioning, dismantling and disposal

- Observe the [Safety](#) information during all work on the device.



www.pfannenbergl.com/disposal