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1. Intended use

Sounder/ LED-light combinations of the PA L 1 series are designed for the signaling of e.g. hazardous conditions in industry, trade and construction areas.

The sounder produces 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 LED in the light section can be operated in different modes, all of which can be activated by an internal switch. The multicolor (RGBW) versions also allow different colors to be assigned to the individual operating modes.

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 and are only intended for fixed installation.

2. Scope of delivery

The scope of delivery consists of:

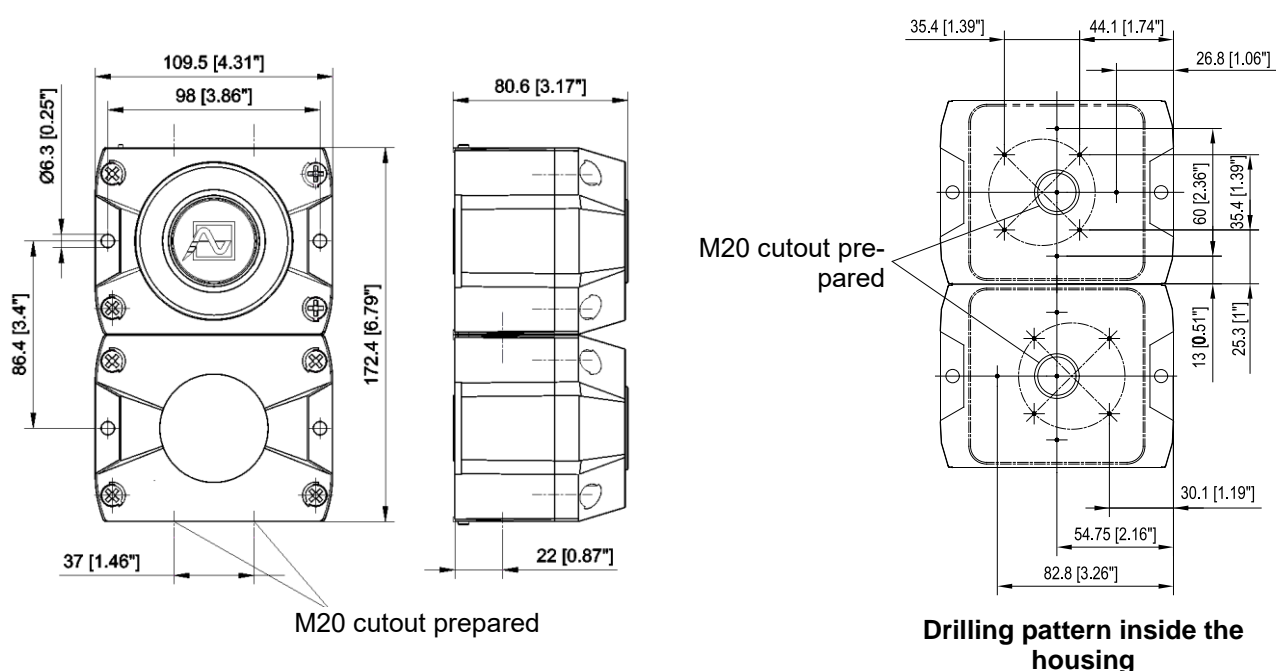
1x Signaling device

1x Diaphragm nipple M20

(Option: Cable gland/ M12- plug-in connector)

1x Quick guide

3. Dimensions



4. Technical data

4.1 General

	PA L 1	
Max. sound level	105 dB (A) 1m	
Volume control	max. -12 dB	
Tones	80	
Illuminant	1x high-performance LED	
Light intensity	70 cd (clear)	
Colors of RGBW-LED	blue, red, green, yellow	
Duty cycle	100%	
Connecting terminals	0.14 - 2.5mm ² fine stranded / AWG24 - AWG 14	
Ingress protection	IP 66 (EN 60529), Type 4 & 4x	
Impact strength	IK08 (EN 50102)	
Protection class	II <input type="checkbox"/> double insulated equipment	
Operating temperature	-40 °C...+55 °C	
Storage temperature	-40 °C...+70 °C	
Max. rel. air humidity	90%	
Cable inlet	6x 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 RGBW version: white	

4.2 Electrical data

Rated voltage (See approvals for limit values)	12 V DC	24 V DC	48 V DC	120 V DC	24 V AC	115 V AC	230 V AC
Operation voltage range	10 – 57 V DC			108 – 132 V DC	21.6 – 26.4 V AC	95 – 127 V AC	195 – 253 V AC
Rated frequency	--				50/ 60 Hz		
Rated current Sounder (max)	25 mA	70 mA	80 mA	30 mA	150 mA	30 mA	16 mA
Rated current light (max)	275 mA	120 mA	65 mA	75 mA	167 mA	51 mA	36 mA
Power consumption (max)	3.6 W	4.6 W	7 W	12,6 W	7.6 VA	9.3 VA	12 VA






5. Approvals

(Approvals are valid for marked devices)

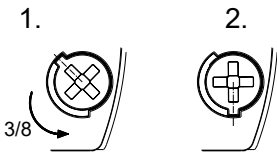
UL, cUL In preparation	S7256	
UL, cUL	Rated Voltage 24V AC 115V AC 230V AC 12V DC 24V DC 48V DC	Audible and Visual signal Appliance General Signal Equipment UCST, UCST7 and UEES, UEES7

6. Commissioning

6.1 Safety information

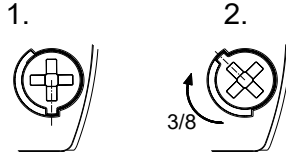
	<p>DANGER - Danger to life due to electric shock Voltage-carrying devices and exposed connection cables may cause electric shocks and serious accidents.</p> <ul style="list-style-type: none"> ➤ Only trained and authorized electricians may work on electrical connections. ➤ Disconnect all supply lines 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.
	<p>WARNING - Danger due to unauthorized use of the devices Improper use may lead to serious accidents.</p> <ul style="list-style-type: none"> ➤ Ensure that the connection cable is protected against pulling and twisting during installation. The devices are only intended for fixed installation. <p>To ensure long-term function:</p> <ul style="list-style-type: none"> ➤ Do not mount the sound projector pointing upwards in dusty environments or outdoors.
	<p>DANGER - Danger due to damage to the devices Non-compliance with the information on the type plate can lead to serious accidents.</p> <ul style="list-style-type: none"> ➤ Always observe the information on the type plate when installing and maintaining the devices.
	<p>CAUTION - Risk of injury due to sharp edges or heated components</p> <ul style="list-style-type: none"> ➤ Wear gloves during any installation, assembly or service/maintenance work. ➤ Perform wiring tasks at a distance from sharp edges, corners and internal components.
	<p>CAUTION - Risk of hearing impairment</p> <ul style="list-style-type: none"> ➤ Wear sound insulation equipment during work/testing to prevent hearing impairment. <p>CAUTION - Impairment of vision</p> <ul style="list-style-type: none"> ➤ Avoid constant, direct glances into the activated lights to prevent impairment of vision.

Opening the housing



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

Closing the housing



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

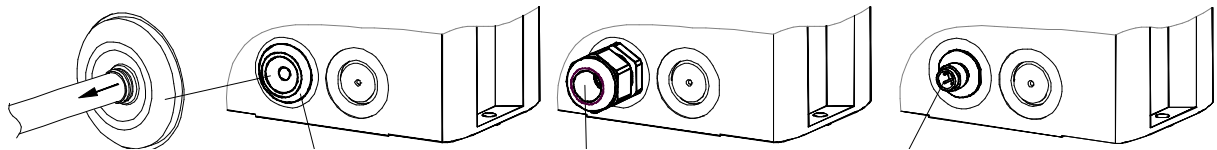
The device is delivered in an unsealed condition. Sealing plugs for the housing screws are available as accessories.

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.

Diaphragm nipple IP 66 (supplied)

Cable gland IP 66 (option)

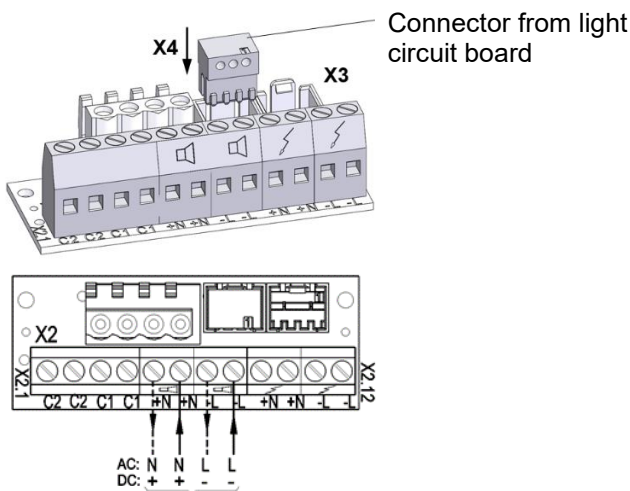
M12 plug-in connector IP 66, for low-voltage devices (option)

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

6.2 Electrical connection

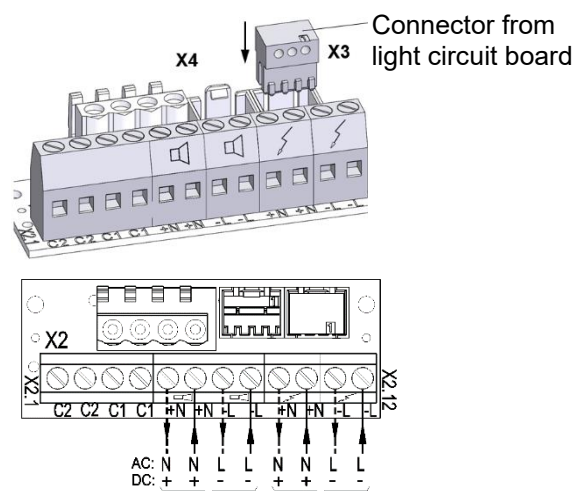
- Observe the [Safety information!](#)

Common connection of light and sounder (Factory setting)



Operating voltage connection

Separate connection of light and sounder

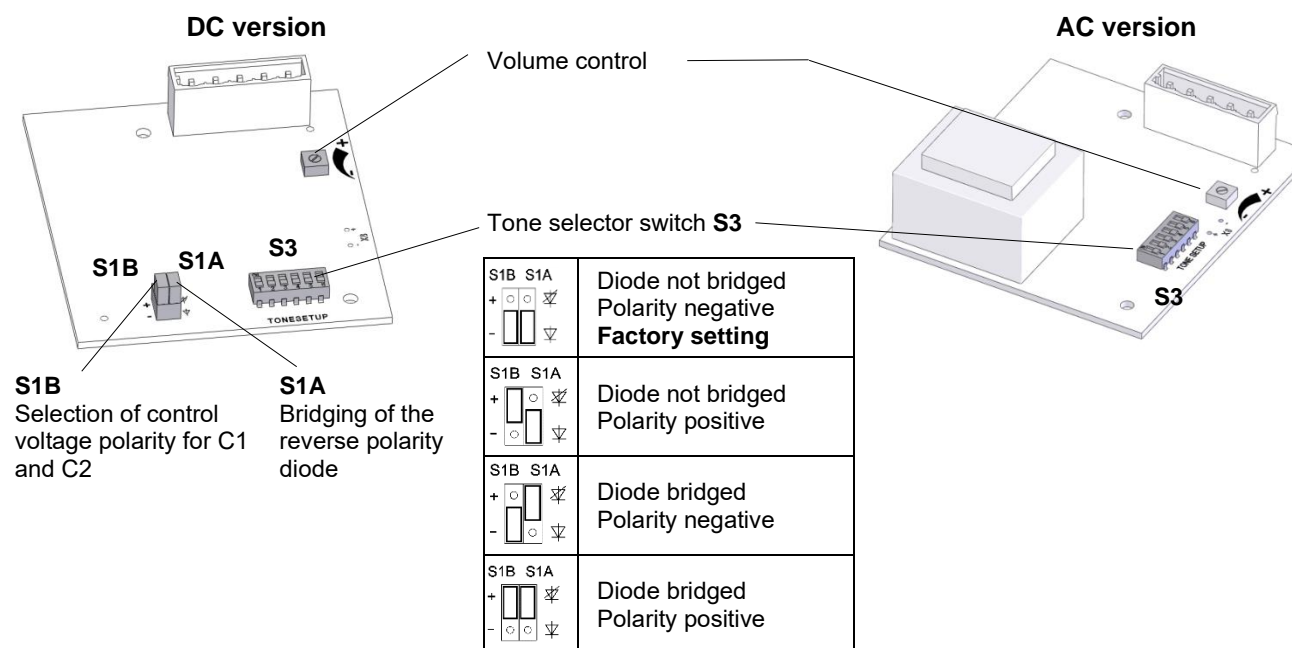


Operating voltage connection for sounder

Operating voltage connection for 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.



S1B
Selection of control voltage polarity for C1 and C2

S1A
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:

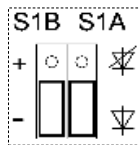
Note: Always apply the supply voltage together with the control inputs.

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.

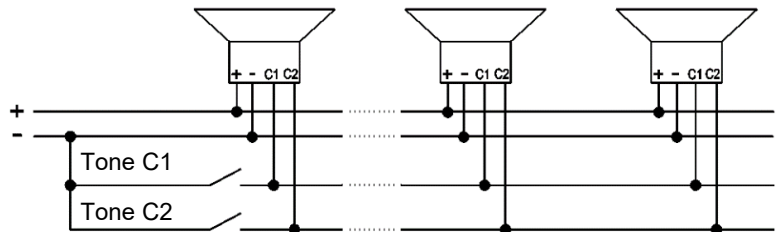
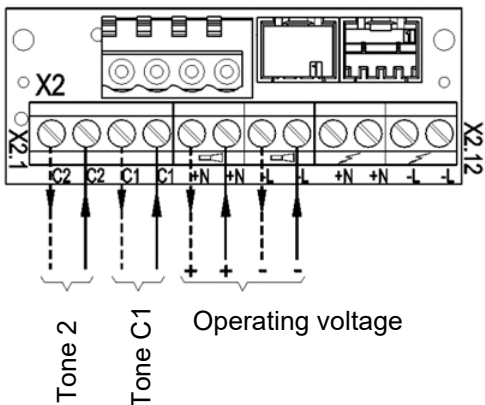
Negative control: (Factory setting)

Switch setting should be as follows:

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



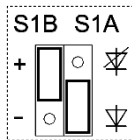
(on the driver board)



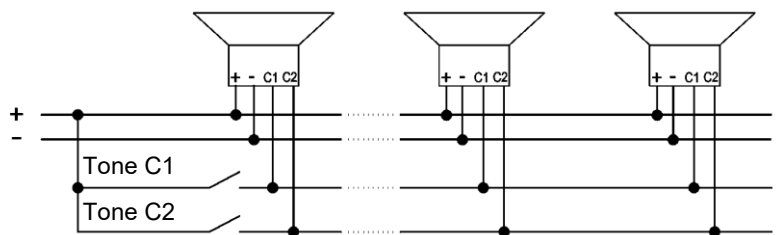
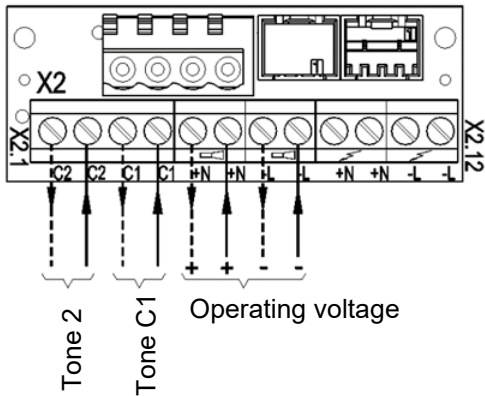
Positive control:

Switch setting should be as follows:

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



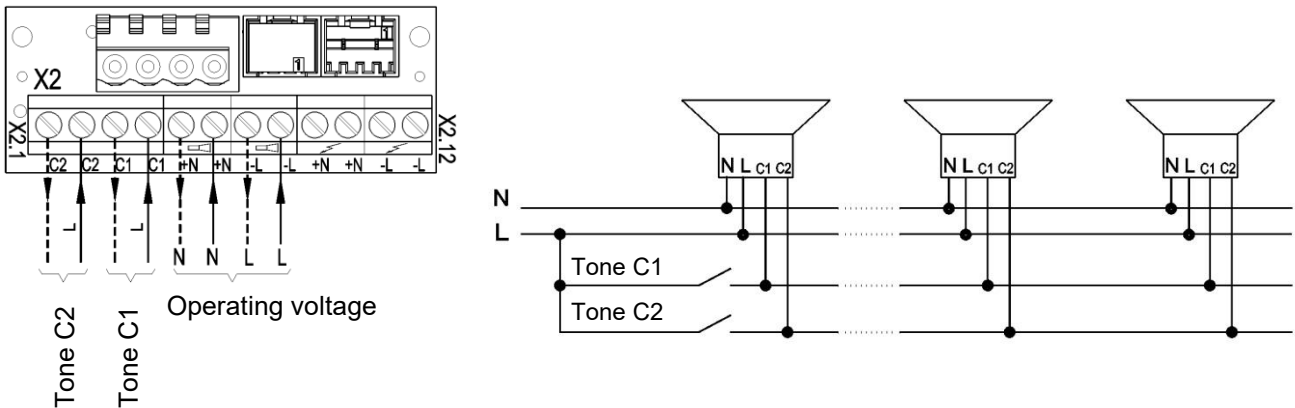
(on the driver board)



AC version:

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

Apply phase "L" of the supply voltage to the control inputs C1 / C2.



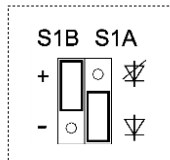
7.1.2 Stage selection by supply via control input (TAV) – all DC versions

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.

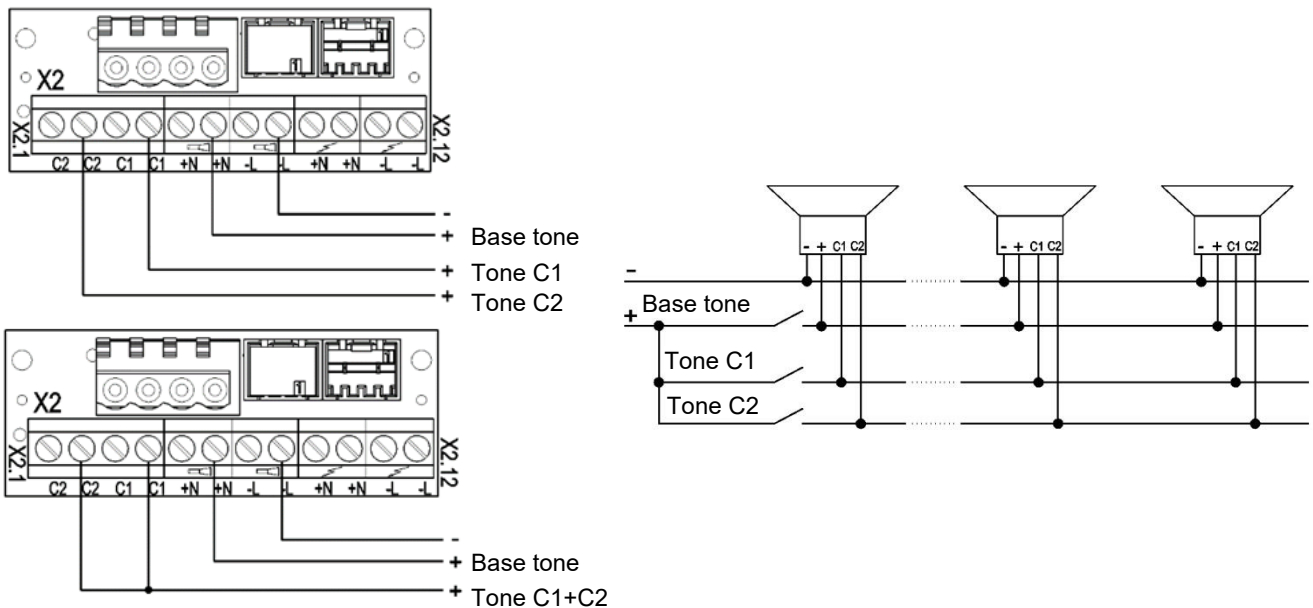
Switch setting should be as follows:

- **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".



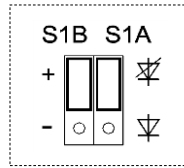
7.1.3 Stage selection by reverse polarity (TAR) - all DC versions

Note: Only applicable to DC version!

The control inputs C1 and C2 must not be connected on the connection board!

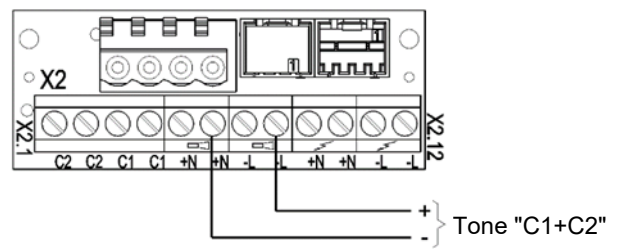
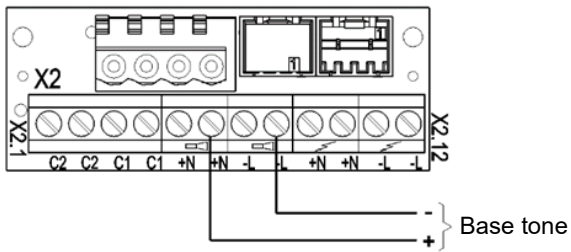
Switch setting should be as follows:

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



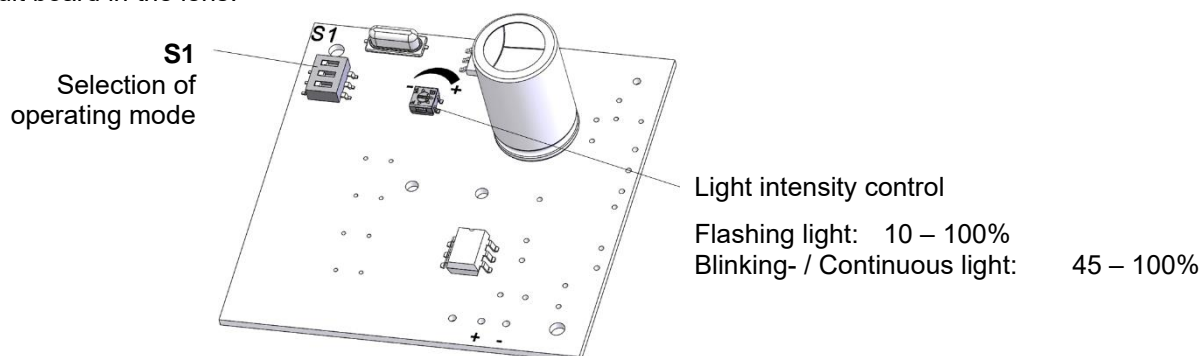
(on the driver board)

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



8.1 Setting the operating modes - versions with single color LED

Circuit board in the lens:

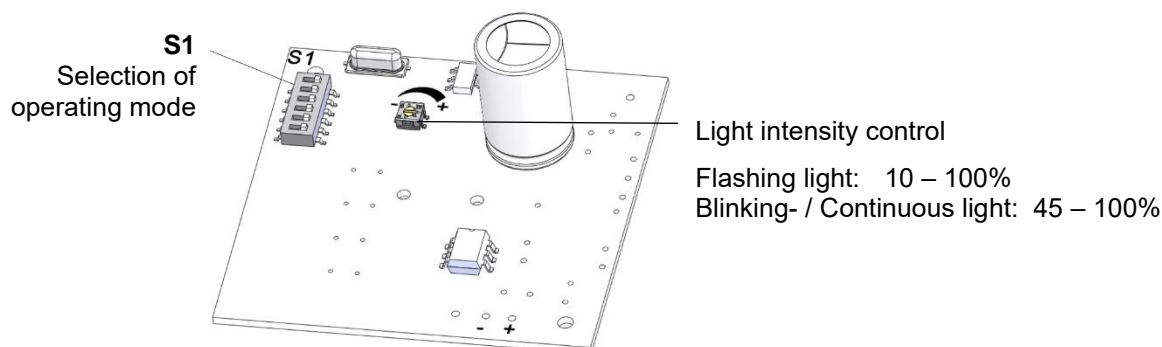


S1			Operating mode
1	2	3	
OFF	OFF	OFF	Flashing light 1 Hz *
OFF	OFF	ON	Flashing light 0.75 Hz
OFF	ON	OFF	Continuous light
OFF	ON	ON	Blinking light 1 Hz
ON	OFF	OFF	Flashing light 2 Hz
ON	OFF	ON	Blinking light 2 Hz
ON	ON	OFF	Flashing light 0.1 Hz
ON	ON	ON	Flashing light 0.5 Hz
OFF	OFF	ON	Double Flash mode (DFM) see Option

* Factory setting

8.2 Setting the operating modes - versions with multicolor LED (RGBW)

Circuit board in the lens:



S1			Operating mode
1	2	3	
OFF	OFF	OFF	Flashing light 1 Hz *
OFF	OFF	ON	Flashing light 0.75 Hz
OFF	ON	OFF	Continuous light
OFF	ON	ON	Blinking light 1 Hz
ON	OFF	OFF	Flashing light 2 Hz
ON	OFF	ON	Blinking light 2 Hz
ON	ON	OFF	Flashing light 0.1 Hz
ON	ON	ON	Flashing light 0.5 Hz
OFF	OFF	ON	Double Flash mode (DFM) see Option

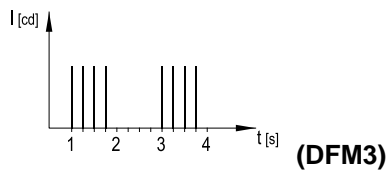
S1			Color assignment
4	5	6	
OFF	OFF	OFF	Red *
	OFF	ON	Blue
	ON	OFF	Green
	ON	ON	Yellow

* Factory setting

9. Option

Double Flash Mode (DFM)

Instead of the operating mode „Flashing light 1 Hz“ the following double flash is available:



10. Accessories

Item No.	Designation
28300000002	Sealing plug, 4-pack
28912000000	Spare locking bolt, 4-pack
28300000004	Surface seal

11. Maintenance, service, repairs

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

The device requires no special maintenance.

- Carry out external cleaning using a weak soap solution without using any solvents.
- 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.

12. Decommissioning, dismantling and disposal

- Observe the [Safety information](#) during all work on the device.
- Only properly qualified personnel should dispose of old devices in accordance with applicable environmental regulations.
- Old devices are also professionally disposed of by Pfannenberg. Delivery to one of our manufacturing facilities shall be free of charge.