Langmatz

Operating Instructions

Acoustics for road traffic signal systems
Soundguide EK598

Safety tested
Production monitored
TÜV SÜD
Functional Safety

soundguide

Contents

1 General information

These operating instructions are included with delivery.

Warning!
Any person involved in the operation, maintenance and repair of the product must first read, understand and follow these operating instructions. We accept no liability for damage and operating malfunctions caused by failure to comply with these operating instructions.

Units may only be installed by specialist road traffic installation personnel. Installation must comply with all applicable regulations and guidelines.

In the interest of further development, we reserve the right to change individual assemblies and accessories as considered necessary for further safety and performance improvements, while preserving the main features.

2 Safety information

The product corresponds to the current state-of-the-art technology at the time of printing and is delivered in an operationally safe condition. Unauthorised modifications, particularly to safety-related parts, are prohibited.
Langmatz GmbH warns against the misuse of the product.
Units may only be opened by specialist personnel. Before opening a device, ensure that it is disconnected from the operating voltage.
Operating with an open housing carries a risk of contact with live components or cables and/or conductor paths.
Observe the technical data provided (see section 3.2).

The operating company is responsible for installing, operating and maintaining the fixtures.

The operating company is responsible for the following:

- Preventing danger to the life and limb of users and third parties.
- Ensuring operational safety.
- Precluding downtime and environmental impact due to incorrect handling.
- Ensuring that protective clothing is worn when working with or on the product.
- Make sure that the green cable is monitored by the traffic light controller according to VDE 0832-100 in order to guarantee SIL 3-compliant safety functionality

Do not use the product if it is damaged. Please contact the hotline (see section 19 Contact).

Danger!

Applicable occupational safety and environmental protection regulations must be complied with during installation, operation, maintenance, and repair.

3 Product description

3.1 Dimensions

Fig. 1

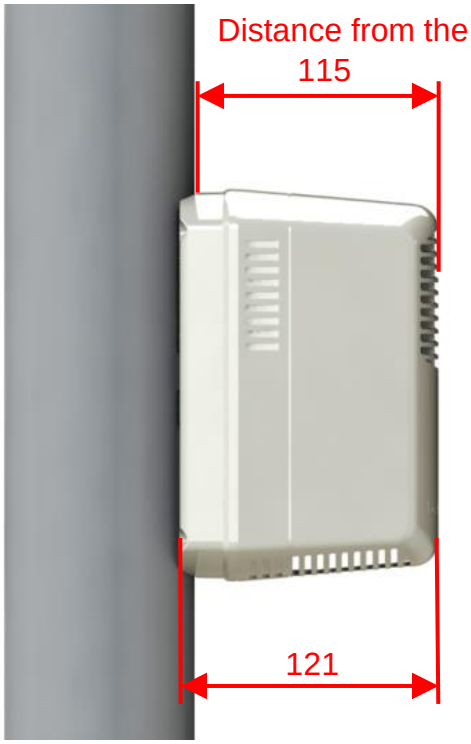


Fig. 2

Fig. 3

Fig. 4

3.2 Technical data

Designation	Acoustics for road traffic signal systems
Housing colour	Grey (similar to RAL 7032) Green (similar to RAL 6009) Black (similar to RAL 9017)
Housing material	Polycarbonate (PC)
Protection class	II
Protection rating	IP54
Power consumption	Typically 5 W | maximum 8 W
Pole adapter	Universal, stainless steel; suitable for a diameter of 78 mm – 159 mm
Installation options	Screw mounting, strap fastener or installation in a signal chamber.
Ambient temperature	-25°C to +60°C
Height / Width / Depth	184 mm / 96 mm / 115 mm (distance from the pole)
Weight	Approx. 1320 g (excluding packaging)
Acoustics frequency range	500 – 6000 Hz
Pedestrian crossing signal (RS) clock frequency as per DIN 32981	Standard settings: 1 Hz; 2 Hz; 4 Hz; 6 Hz; (traffic noise-dependent). Customised settings are possible.
Guide signal (GS) clock frequency according to DIN 32981	Standard settings: 1.2 Hz; (traffic noise-dependent). Customised settings are possible.
Acoustic volume at a distance of 1 m as per DIN 32981	(traffic noise-dependent min. 35 dB(A), up to max. 90 dB(A). Customised settings are possible.
Acoustic sounds	Sounds as per DIN 32981 can be freely selected
Parameter configuration	Via Bluetooth acc. to the IT Security Act via Windows software
Connection cable	13x0.5 mm² with bootlace ferrules
Installation height	<2000 m
EMC/ESD	According to DIN EN 50293
Impact strength	IK10
Vibrations (transport and operation)	Class AM1 according to EN 50556:2011
Shock test (transport)	Test Ea EN 60068-2-27:2009
Service life	> 10 years

3.3 Safety key indicators

The failure rates of the electronics were determined by an FMEDA according to IEC 61508. The calculations are based on component failure rates in accordance with SN 29500.

Time between periodic safety checks (Interval between unit inspections)	T1	1 year
Probability of failure per hour (Average frequency of a hazardous failure of the safety function)	PFH	1,650*10E-11
Probability of failure on demand(Average probability of a hazardous failure on demand of the safety function)	PFD	1,503*10E-7
Safe failure fraction (percentage of safe failures)	SFF	0.99
Hard fault tolerance (An HFT = N indicates that N + 1 hardware errors, unfavourably distributed, will lead to a loss of the safety function)	HFT	1
Type E/E/PE system		Type B
Failure response time		1 sec
Safe state		"Feindliches Grün" is prevented (German legal term referring to a malfunction in the traffic light, e.g. the light in the right of way direction is out and a green light is indicated in the other direction, which can cause traffic accidents)

3.4 Block diagram

Note! Disconnected cores must remain insulated.

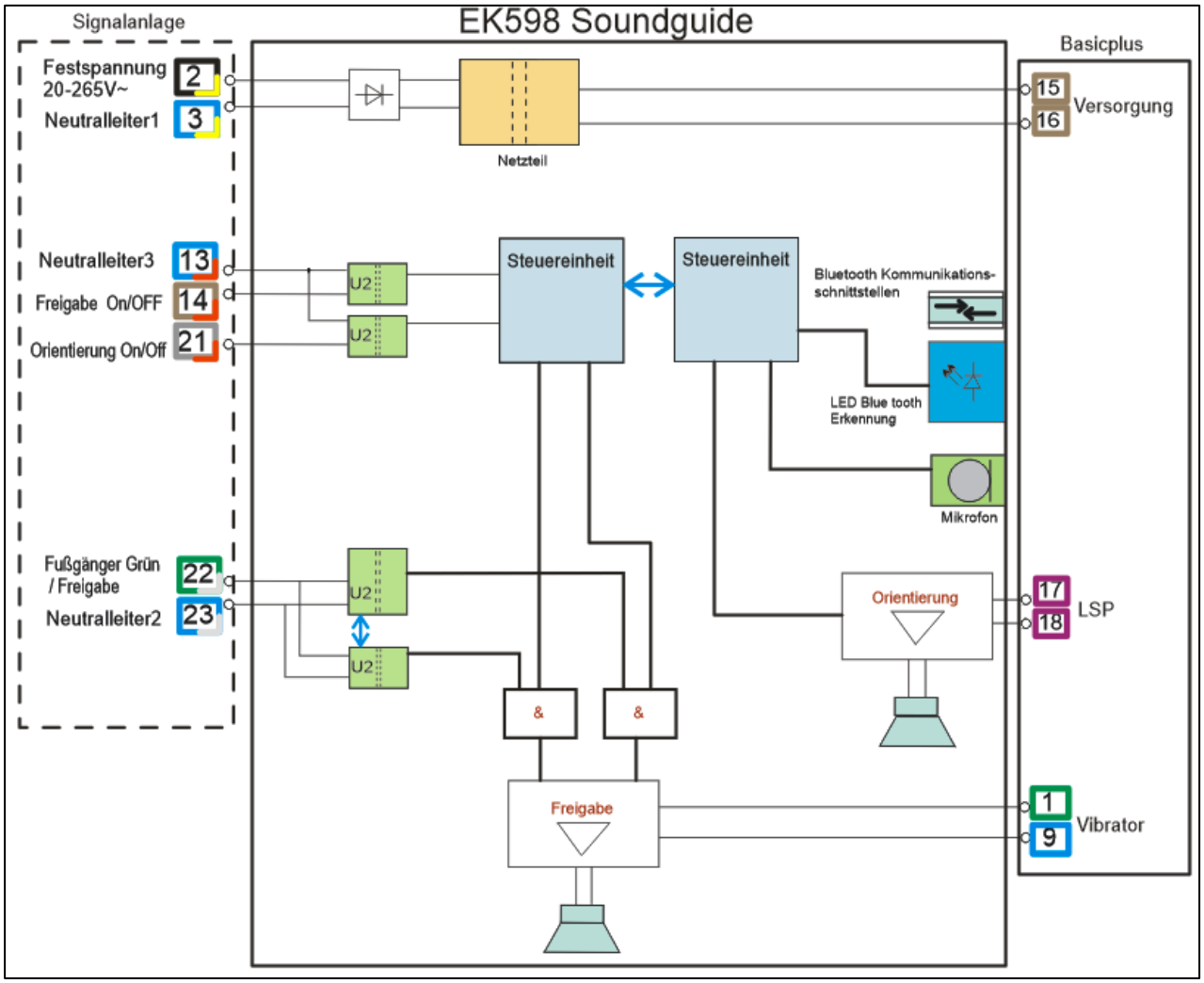


Fig. 5

Note:

Striped cores are connected to the traffic light controller.

Solid coloured cores are connected to the **basicplus** EK523.

3.5 Block diagram of control unit / Soundguide EK598 / Basicplus EK523

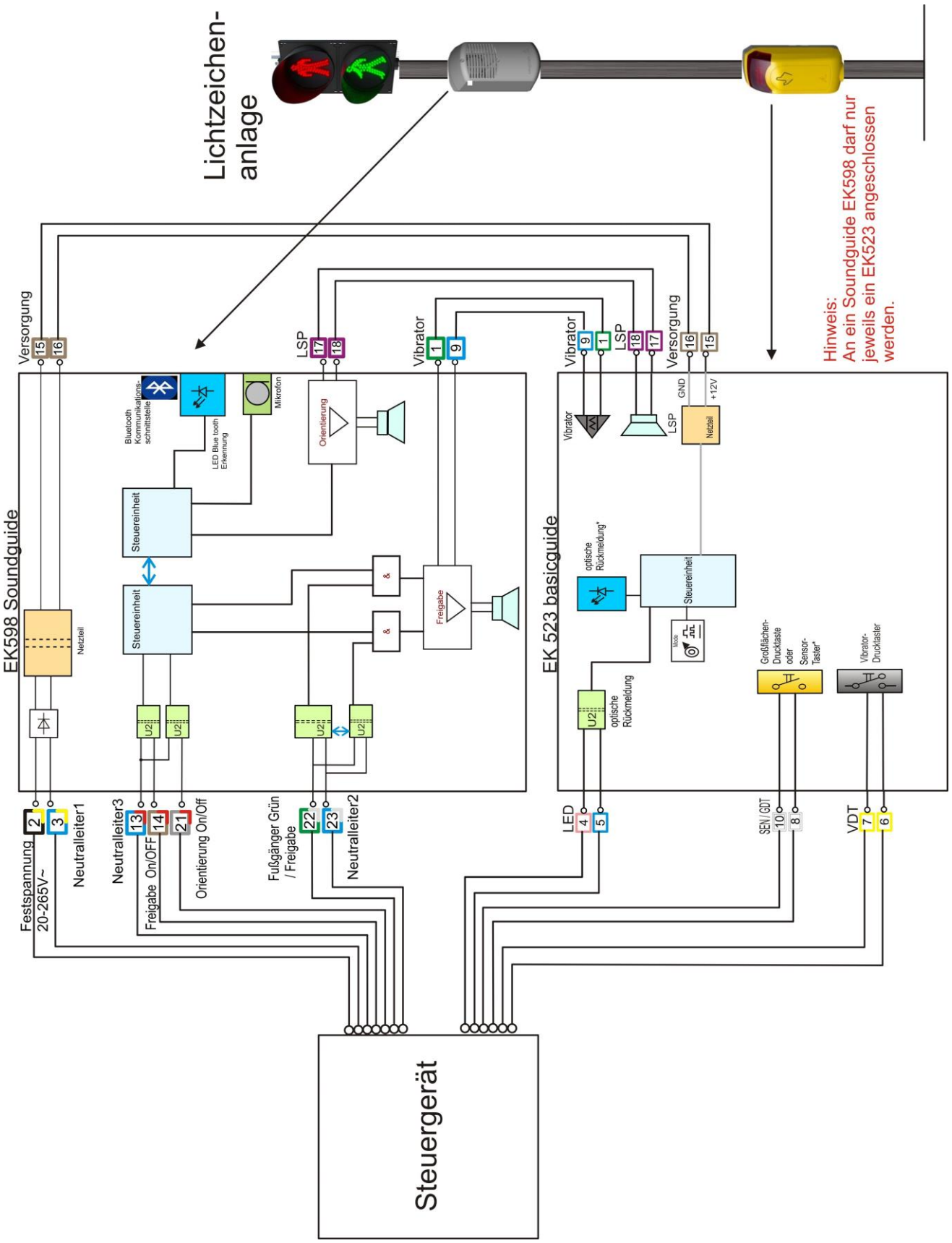


Fig. 6

3.6 Operating voltages

Designation	Core	Minimum	Maximum	Unit
Permanent operating voltage	2 (BK/YE)			
Permanent operating voltage	3 (BU/YE)			
Input voltage range		0.8 U_{nom} (min. 20 V)	1.2 U_{nom} (max. 265 V)	Volts
Input power			8	watts

Universal voltage unit - nominal voltage is set using software

Nominal voltage	24 DC | 40 AC | 110 AC | 230 AC	Volts

3.7 Green input (pedestrian crossing enabled)

Designation	Core	Minimum	Maximum	Unit
Pedestrian GREEN / Pedestrian crossing signal L/+	22 (GN/WH)			
Pedestrian GREEN / Pedestrian crossing signal N/-	23 (BU/WH)			
Input voltage range		0.5 U_{nom} (min. 16 V)	1.2 U_{nom} (max. 265 V)	Volts
Input power			1	watts

Universal voltage unit - nominal voltage is set using software

Nominal voltage	24 DC | 40 AC | 110 AC | 230 AC	Volts

3.8 Optional control inputs

Designation	Core	Minimum	Maximum	Unit
Neutral conductor	13 (BU/RD)			
Pedestrian crossing signal ON / OFF	14 (BN/RD			
Guide sound ON / OFF	21 (GY/RD)			
Input voltage range per input		0.5 U_{nom} (min. 16 V)	1.2 U_{nom} (max. 265 V)	Volts
Input power			0.6	watts

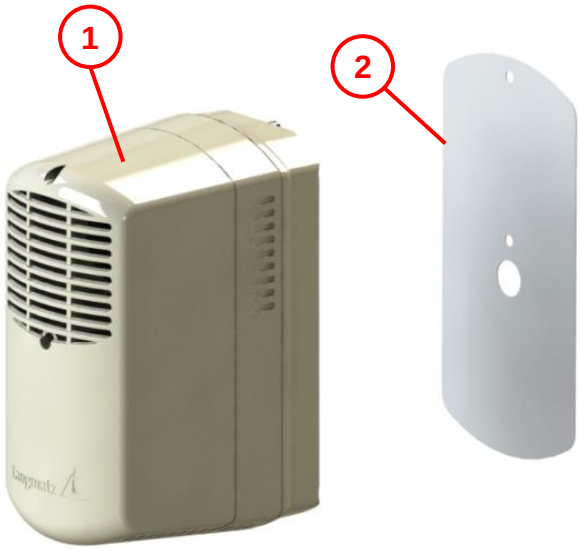
Universal voltage unit - nominal voltage is set using software

Nominal voltage	24 DC | 40 AC | 110 AC | 230 AC	Volts

3.9 Guideplus connection

Designation	Core	
Guideplus supply	15 / 16 (BN)	
Guideplus loudspeaker	17 / 18 (PK)	
Guideplus vibrator	1 (GN)	
Guideplus vibrator	9 (BU)	

4 Package includes



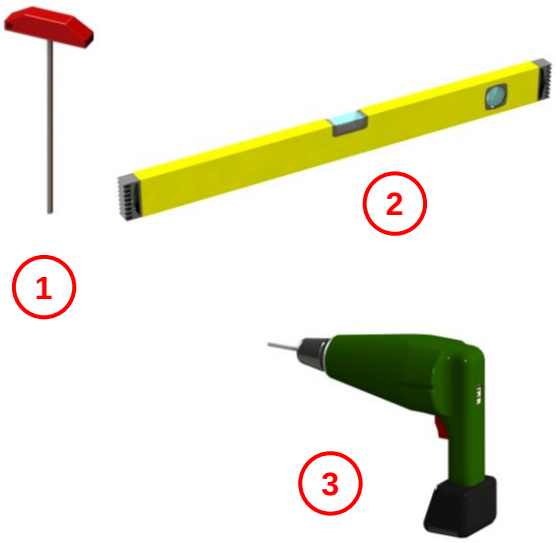
Item 1 1x Soundguide EK598 including connection cable (not shown).

Item 2 1 x drilling template (self-adhesive paper).

Optional: 1x drilling jig (metal)
See section 11 on page 26.

Fig. 7

5 Required tools (not included)



Item 1 Size 4 Allen key

Item 2 Spirit level

Item 3 Power drill

Not shown:

- Drill bits Ø5 mm and Ø14 mm
- M6 thread cutter
- Clamp tape up to 19 mm wide

Fig. 8

6 Installation

6.1 Drilling installation holes on the pole

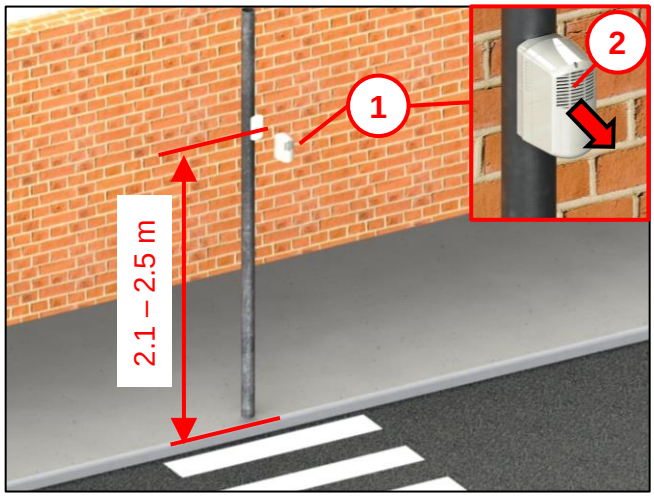


Fig. 9

Installation in accordance with DIN 32981.

The Soundguide **(1)** is installed at a height of 2.1 m – 2.5 m on the traffic light pole of the road traffic signal system.

The sound outlet opening in the upper chamber **(2)** faces the pedestrian crossing, towards the centre of the carriageway.

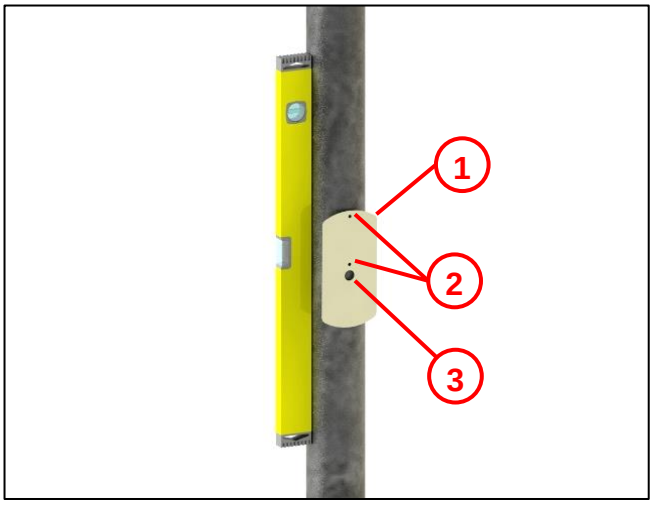


Fig. 10

We recommend using a spirit level to ensure correct levelling.

- Remove the protective film from the drilling template **(1)**.
- Attach the drilling template at the appropriate height on the traffic light pole.
- Punch-mark all the holes.
- Drill 2 holes with a diameter of 5 mm **(2)** (for mounting).
- Cut 2 M6 threads **(2)**.
- Drill 1 hole with a diameter of 14 mm **(3)** (for the cable duct).

Langmatz recommends using a metal drilling jig.
Langmatz item no. 700663080.
See also **section 11 on page 26**

6.2 Installing the Soundguide

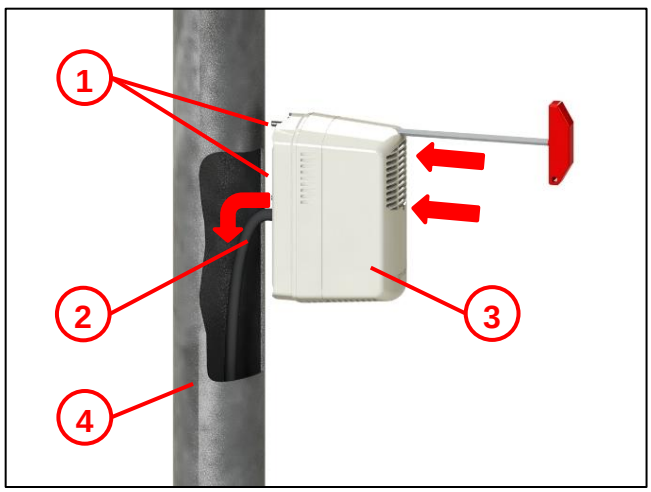


Fig. 11

- Insert the connecting cable **(2)** into the traffic light pole **(4)**.
- Screw the Soundguide **(3)** to the traffic light pole with 2 M6x25 fastening screws **(1)** (captive screws).

Note: Do not use lubricants!

- Connect the connecting cable as per the block diagram (section 3.4)!
- Commission the unit (see **section 0 on page 15**).

6.3 Installation with a clamping strap

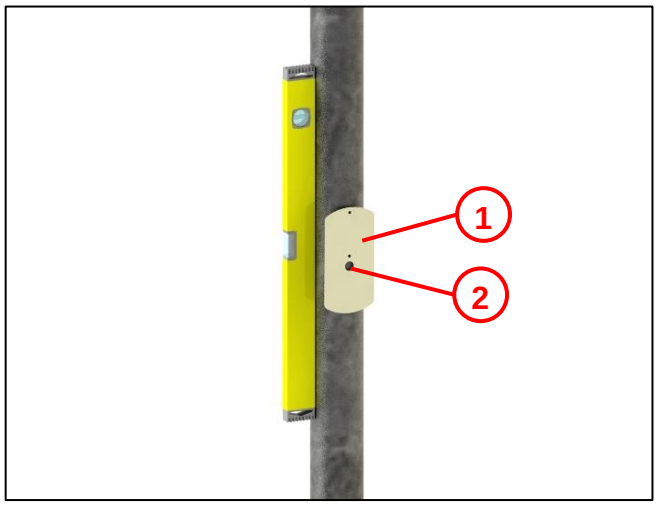


Fig. 12

We recommend using a spirit level to ensure correct levelling.

- Remove the protective film from the drilling template **(1)**.
- Attach the drilling template at the appropriate height on the traffic light pole.
- Punch-mark the centre of the drill hole for the cable duct **(2)**.
- Drill 1 hole with a diameter of 14 mm **(2)** (for the cable duct).

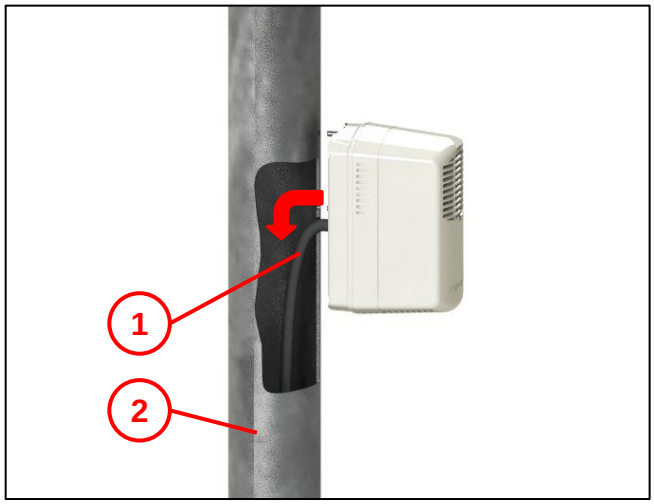


Fig. 13

- Insert the connecting cable **(1)** into the traffic light pole **(2)**.

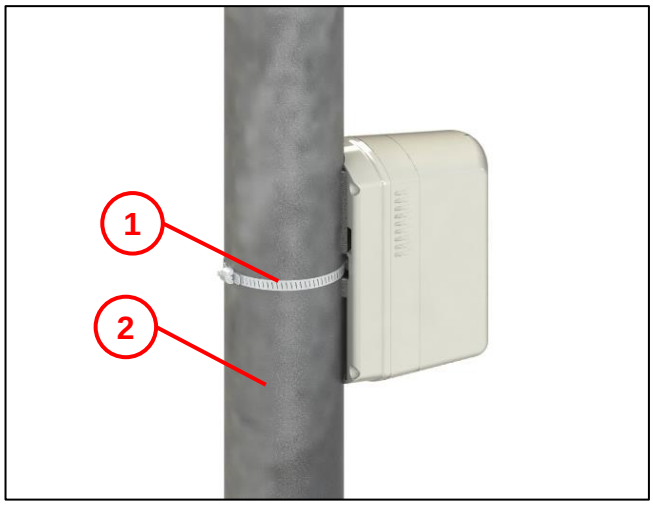


Fig. 14

- Feed the clamping strap **(1)** (not included with delivery) through the rear of the signalling unit in the centre.
- Wrap the clamping strap **(1)** around the traffic light pole **(2)** and tighten.
- Connect the connecting cable as per the block diagram (section 3.4)!
- Commission the unit (see **section 0 on page 15**).

7 Installation in the signal chamber

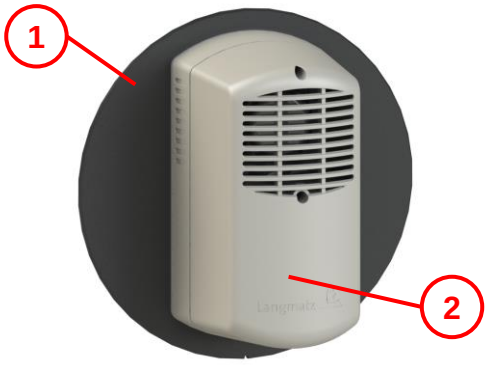


Fig. 15

The original colour of the mounting panel **(1)** and upper part **(2)** of the Soundguide is black. The top part **(2)** is shown in grey here for ease of illustration.

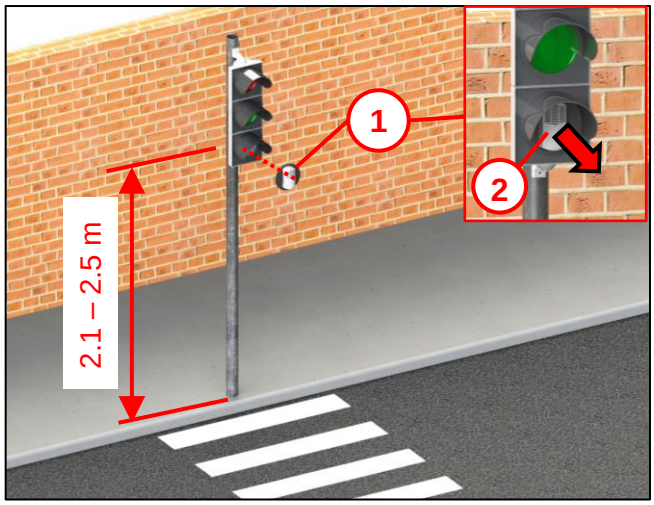


Fig. 16

Installation in accordance with DIN 32981.

The Soundguide EK598 **(1)** is installed in the signal chamber.

The upper sound outlet opening of the Soundguide **(2)** faces the pedestrian crossing, towards the centre of the carriageway.

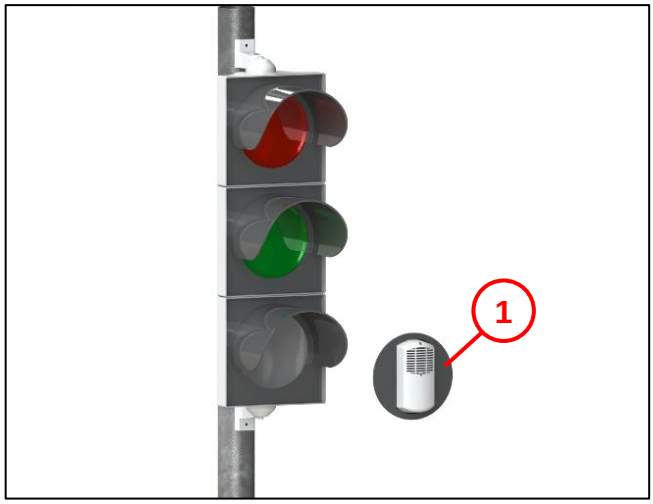


Fig. 17

- As per the manufacturer's instructions, install the Soundguide **(1)** like a diffuser in the lowest signal chamber.
- Connect the connecting cable as per the block diagram (section 3.4)!
- Commission the unit (see **section 8 on page 15**).

Note:

Continue to use the shield plate of the signal chamber.

8 Commissioning

- Supply operating voltage to the Soundguide.
- The unit is internally ready for operation.
- Define the operating voltage via the sgManager in the unit.
- Wait for it to change to green for the operating voltage selection to be applied.
- The unit is now ready for operation.
- Check that the unit is working properly (see **section 9 on page 15**).

9 Functional checks

- Check the operating voltage.

- Does the voltage set on the Soundguide correspond to the voltage on the traffic light signal

- Wait for the Pedestrian Red / Pedestrian Green change.
- Pay attention to the following:

- only the guide signal should be activated while pedestrian “Red” is showing.

Caution:
Neither the pedestrian crossing sound nor the tactile signal should be activated!

- The acoustic pedestrian crossing signal should be activated during pedestrian “Green” with the pedestrian signal for the visually impaired activated.
- The tactile signal of the pedestrian signal requesting device should also be activated with the basicplus.

- Document that the functional check has been carried out.
- Document the location and serial number of the unit.

10 Parametrisation

The Soundguide manager (sgManager) is used to parametrise the Soundguide.
The Soundguide needs to be supplied with voltage for this (20 V – 230 V).

10.1 sgManager system requirements

- 1 GHz processor
- 1 GB RAM
- Screen resolution 1024 x 768

Supported operating systems:

- Windows 7
- Windows 8
- Windows 10

10.2 Installing and starting the sgManager

Note: The person installing the software needs administrator access rights on the computer.

- Load the installation file onto the computer.
- Run the installation software.

10.2.1 Starting the parametrisation software

- Insert the software dongle supplied into the USB port.
- Open the “Langmatz” start menu / sub-menu.
- Double-click sgManager to open it.
- Enter the password (only the first time you open the program).
  - Please contact Langmatz GmbH to obtain a password.
  - Have the password request code ready.
- The program starts up.

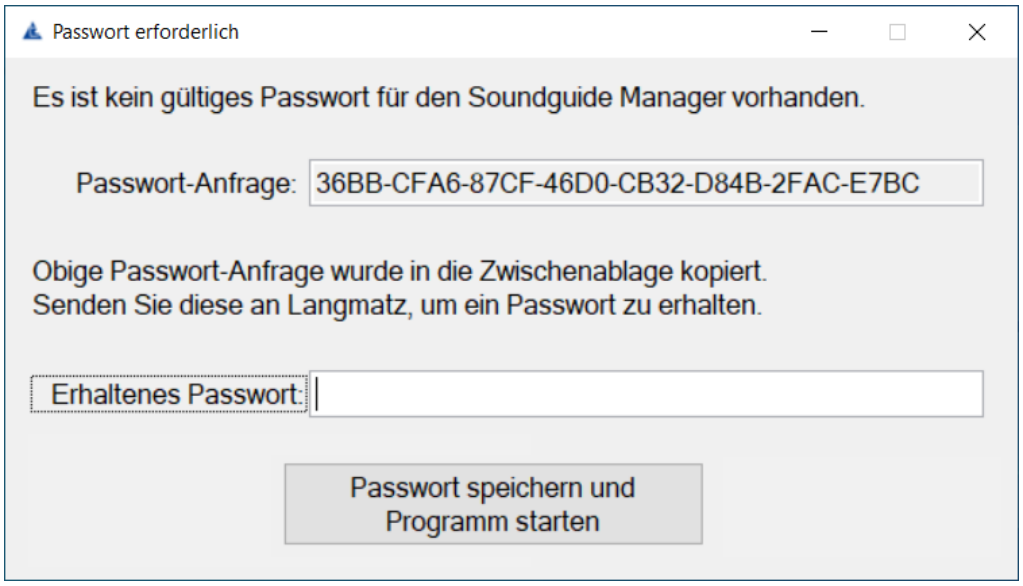
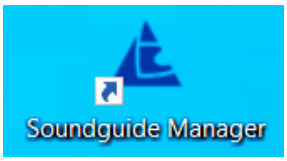


Fig. 18

10.3 Starting the sgManager program



Note:
The sgManager can only be started when the software dongle supplied is connected to the computer via USB.

- Double-click the sgManager icon if it is displayed on the desktop.
  If not: start via the Windows menu.

- The program starts up.

- The software scans for units within range.

  - If there are no units within range, a dummy is displayed which is used to move to sub-menus.
  - Units are listed in a table according to their signal strength **(1)**

- Simply click on a unit row:

  - The Langmatz logo flashes blue on the underside of the Soundguide. This means that the acoustic sound set can be identified when there are multiple Soundguide units within range.
  - The display on the unit in the sgManager changes to blue

23	Hofstraße Gerät 4	61	30.10.2020 14:50

- Double-click the unit row:

  - A connection is established between the sgManager and Soundguide.
  - The Langmatz logo is now permanently lit.

The rows of units can have different background colours:

- Green: Unit has already been parametrised in the current sgManager session.
- Orange: The Soundguide firmware version is out of date and needs to be updated.
- Red: The version of the sgManager is out of date and needs to be updated to parametrise this Soundguide.
- Blue: Soundguide Manager is connecting to the unit

Seriennummer	Name	Signal	Letzte Bearbeitung
20	Hofstraße Gerät 1	71	30.10.2020 13:45
21	Hofstraße Gerät 2	67	30.10.2020 14:00
22	Hofstraße Gerät 3	64	30.10.2020 14:30
23	Hofstraße Gerät 4	61	30.10.2020 14:50

Fig. 19

10.3.1 Display after program start

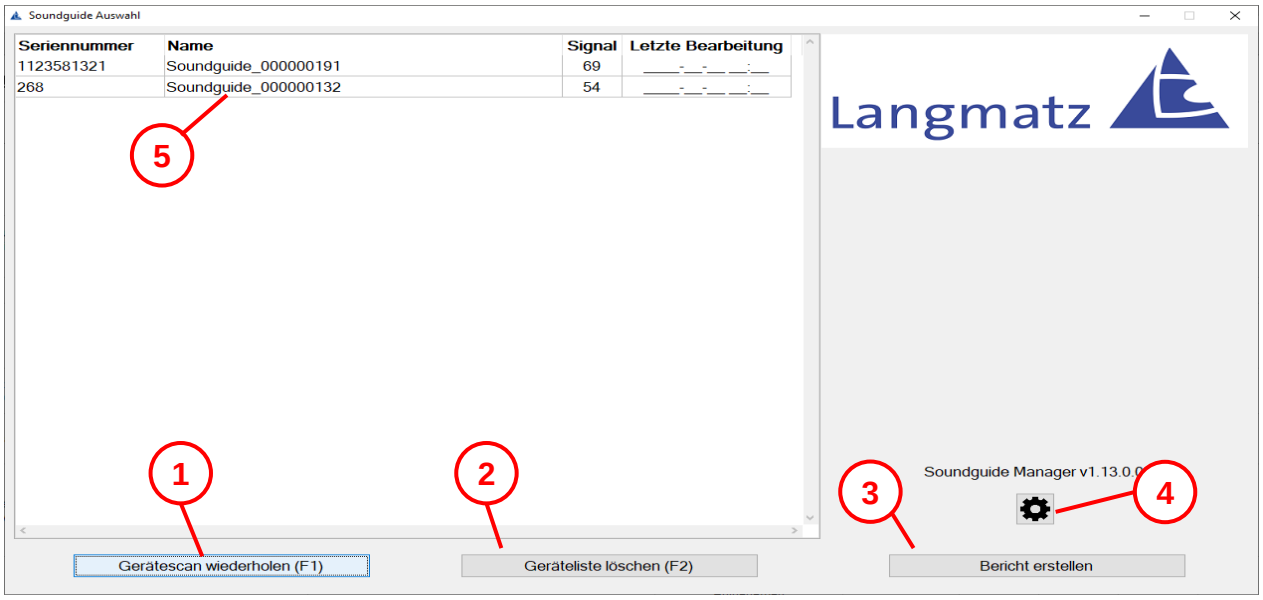


Fig. 20

- Pressing “Repeat unit scan” **(1)** searches for the Soundguide within the reception range and adds new units found to the list (F1 shortcut).
- Pressing “Clear unit list” **(2)** clears the list of units displayed (F2 shortcut).
- Pressing “Create report” **(3)** produces a PDF report. The following window provides the option of adding additional information on the system and the installer to the report.
- Pressing ESC takes the user back to the Soundguide selection.

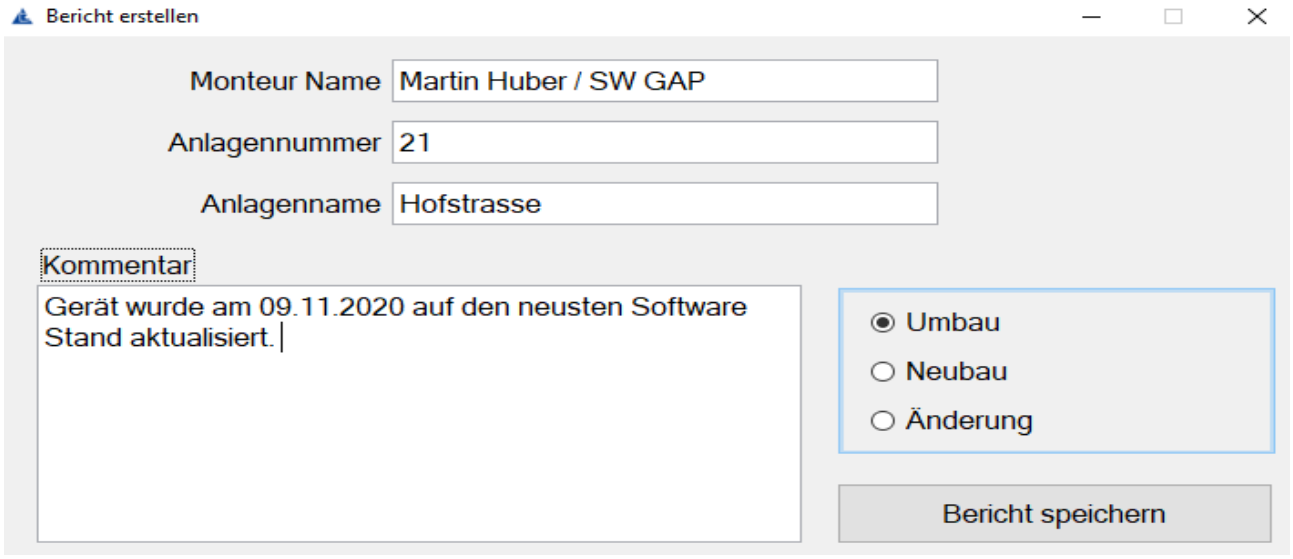


Fig. 21

- Pressing the Gearwheel button **(4)** takes the user to the “Basic settings” menu.
- The dummy **(5)** is displayed or units within range.

10.4 Basic settings

Possible selection points:

- Display and selection of sounds for the Sound settings dropdown menu **(1)**.
- Give the quick-save keys individual names **(2)**.
- Change the sgManager language **(3)**.
- Checkbox ☐ “Permit non-VDE-compliant voltage” **(4)**.
    - When selected, notification of deviation from the standard will appear, that needs to be confirmed (see 19).

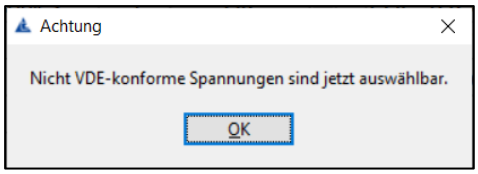


Fig. 22

- Enable signals: OK / Sound is enabled grey / Sound is locked **(5)**.

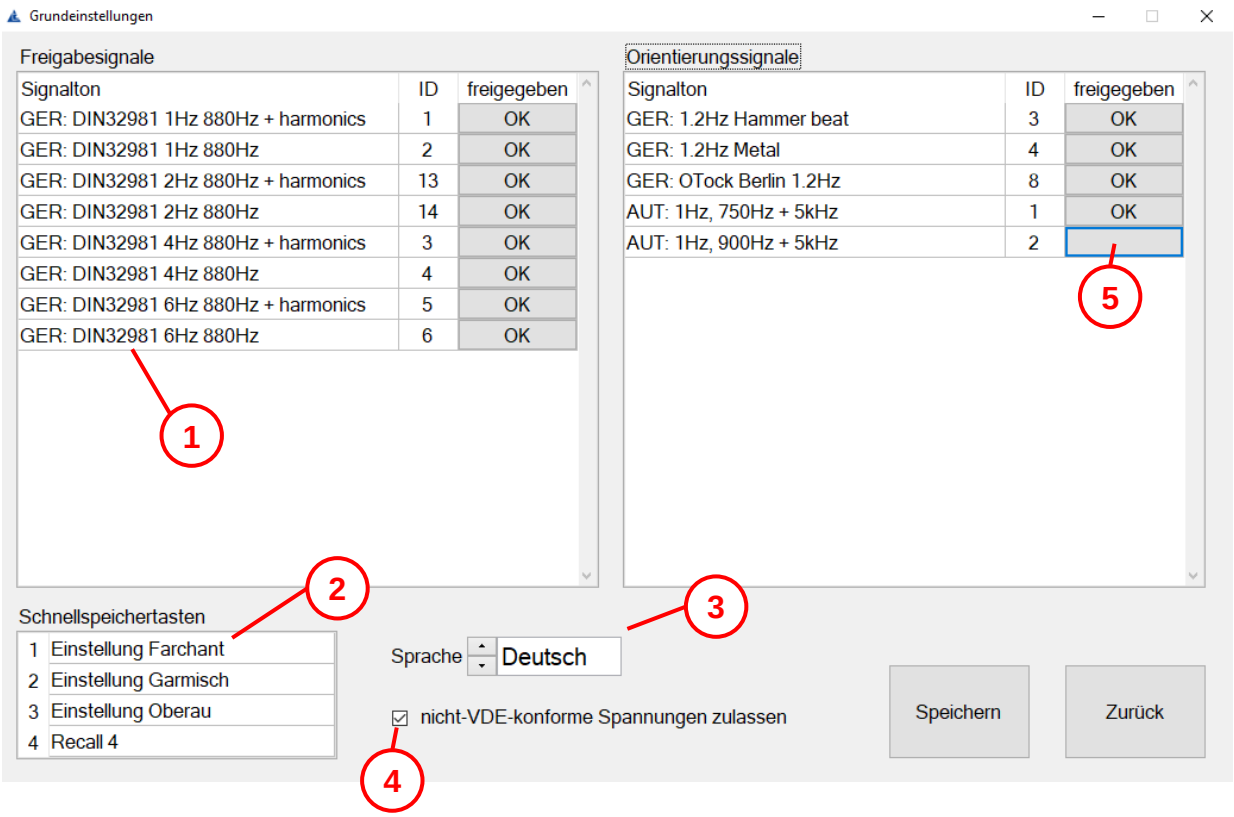


Fig. 23

10.5 Establishing a connection between the sgManager and Soundguide

10.5.1 Identifying the unit

- Single-click the corresponding line.
- Langmatz logo on the underside of the unit starts flashing blue.
- The unit is displayed in blue in the SoundguideManager.

10.5.2 Connecting to the unit

- Double-click the corresponding line.
- A connection with the corresponding unit is established.
- Langmatz logo on the underside of the unit is permanently lit blue.

When establishing a connection, the firmware version of the Soundguide is checked and, if need be, updated to the latest version.

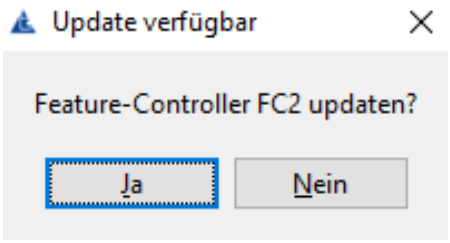


Fig. 24

The display then changes to one of the following menus:

- At initial commissioning: “Voltage settings” menu.
- If the supply voltage is different: “Voltage settings” menu (Voltage set does not match the supply voltage).
- In all other cases: “Sound settings” menu.

10.6 Voltage setting – Sound settings – Advanced settings

There are three different menu windows as soon as the sgManager has established a connection with a Soundguide.

10.6.1 Voltage setting

- Assign an individual name for the Soundguide **(1)**.
- Dimming **(2)** checkbox.
  (can be enabled via “Basic settings”).
- Set the operating voltage **(3)**.
- If the voltage measured matches the selected voltage then the voltage bar appears green **(4)**.
- Read off the current voltage **(5)**.
- “Sound settings” **(6)**.
- “Advanced settings” **(7)**.
- Muting for the pedestrian crossing signal can be inverted **(8)**.
- Muting for the guide sound can be inverted **(9)**.
- If activated, the vibrator runs during the green phase, regardless of the pedestrian crossing sound **(10)**.

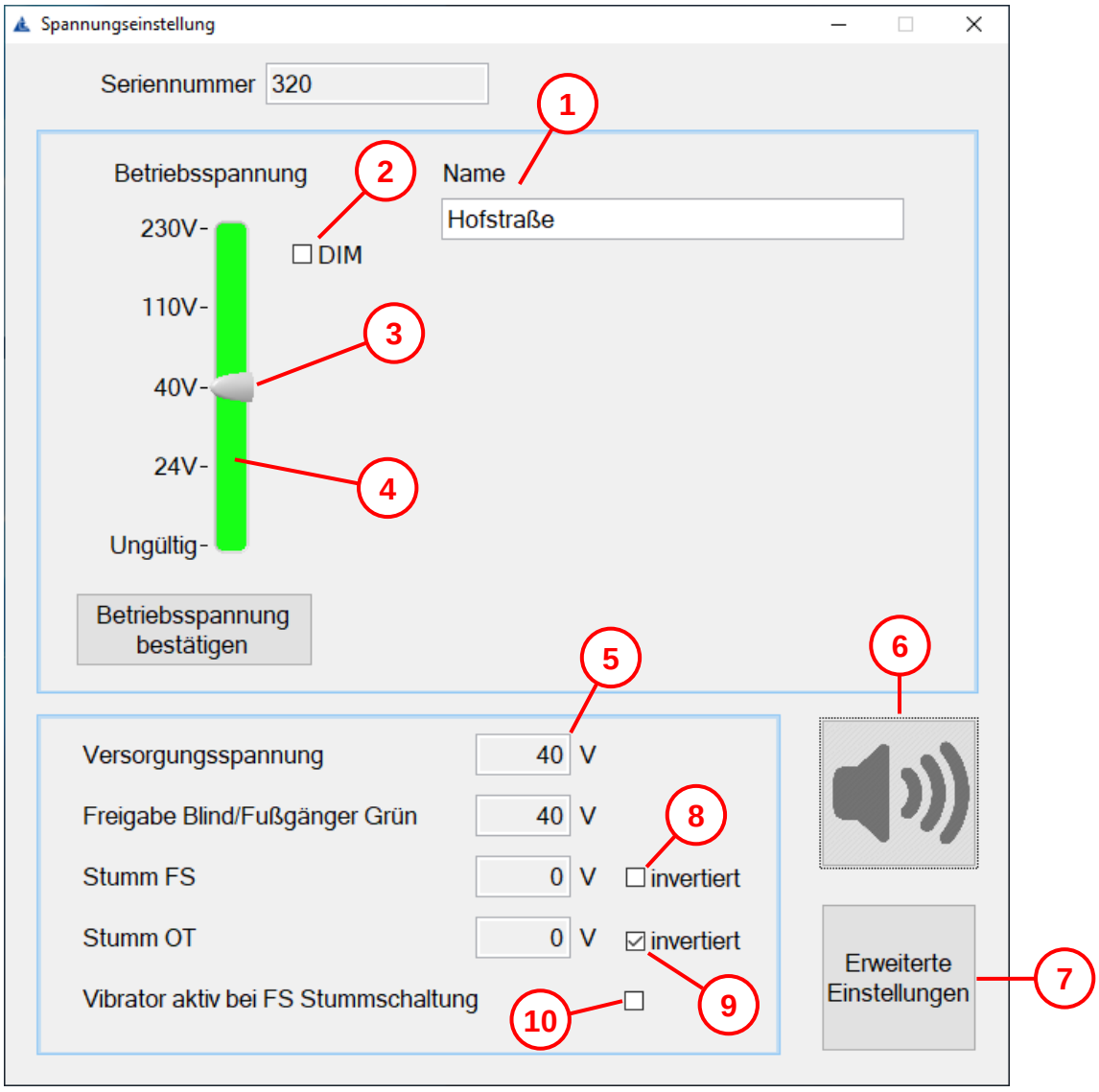


Fig. 25

10.6.2 Sound settings

All the Soundguide's sound parameters can be set here.
The volume of the signal is set via the 'boost'!
The signals are emitted the 'boost' value louder than the ambient noise. The guide sound should be set to ensure that it is audible within a radius of 4.5 m (± 0.5 m).
Set the pedestrian crossing signal according to the carriageway width.
(Recommendation: 1 dB increase for every 2 metres of carriageway length).

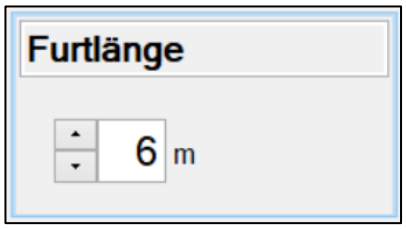


Fig. 26

- If the road width is set here, the "Boost" setting (see Fig. 29) defines the pedestrian crossing signal.
- Normal road width, two-lane, approx. 7 m ("boost" is set at 3 dB).

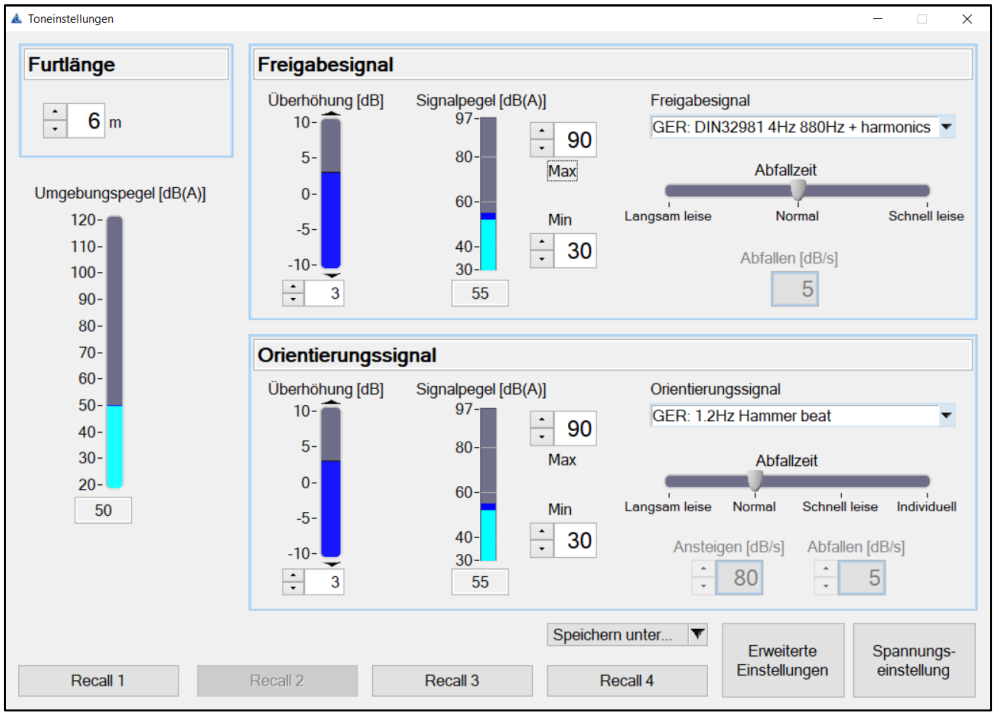


Fig. 27

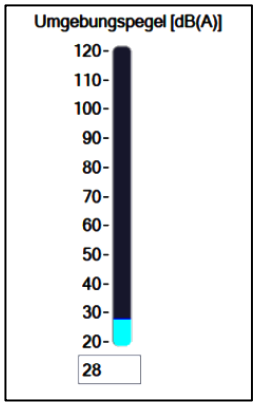


Fig. 28

Presentation of the current ambient noise.

Simplifies parameter setting.

The pedestrian crossing signal and guide signal parameters are set separately from each other.

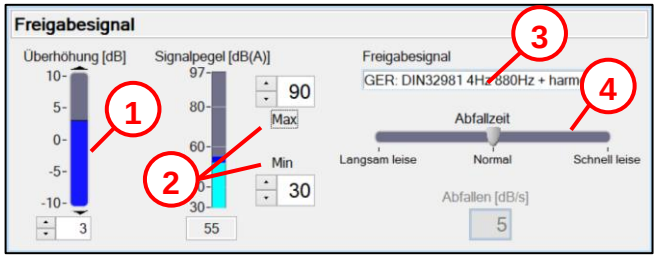


Fig. 29

- Selection of a standardised pedestrian crossing signal from the dropdown menu **(3)** and Fig. 30
- Setting the drop-off time **(4)**
  - “Slowly goes quieter”: (5 dB/s).
  - “Normal”: (10 dB/s).
  - “Quickly goes quieter”: (20 dB/s).
- Current pedestrian crossing signal level emitted and min./max. level limit **(2)**.
- Pedestrian crossing signal boost **(1).** If the boost is adjusted, the “Road width” setting (see Fig. 26) is not taken into consideration.

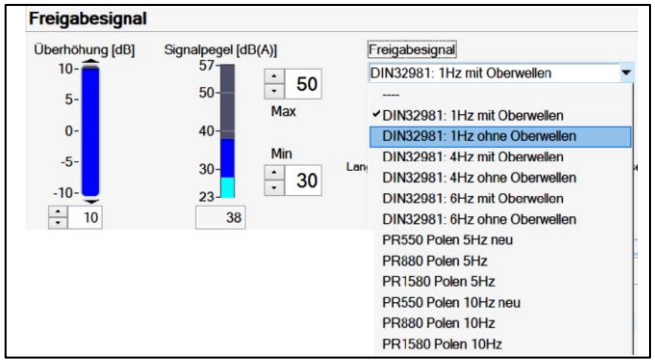


Fig. 30

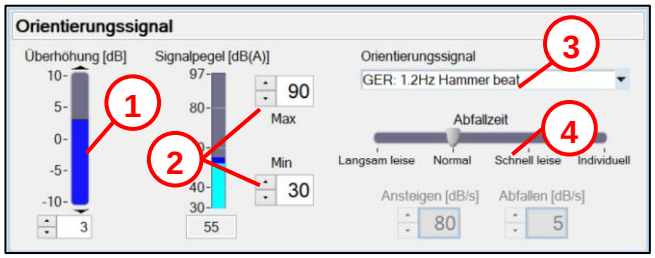


Fig. 31

- Selection of the guide signal from the dropdown menu **(3)** and Fig. 32**.**
- Setting the drop-off time **(4)**
  - “Slowly goes quieter”: (5 dB/s).
  - “Normal”: (10 dB/s).
  - “Quickly goes quieter”:(20 dB/s).
  - individual

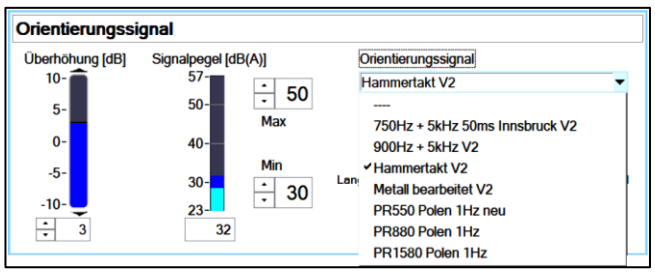


Fig. 32

- Current guide signal level emitted and min./max. level limit **(2)**.
  Guide signal boost **(1).**

Note!

If the addition of “Ambient level” and “Boost” results in a higher level than the maximum level set, the respective signal is only emitted at the maximum level.

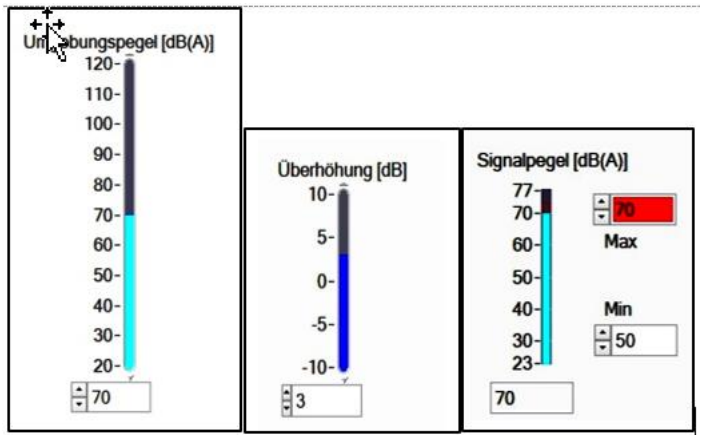
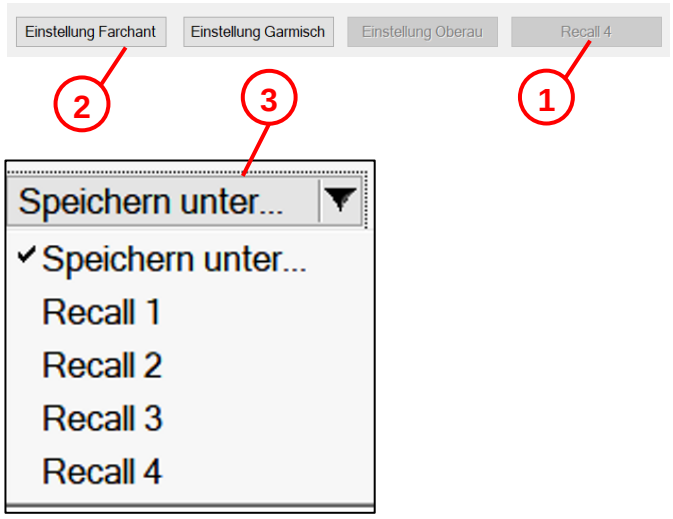


Fig. 33

Example:

Ambient level = 70 dB
Boost = + 3 dB
Max. level emitted = 70 dB
(e.g. traffic-calmed area)

➡ **Level emitted = 70 dB**



Set parameters that will be required again can be saved in the sgManager (on a PC).

- All buttons inactive **(1)**
  = no parameter set saved.

- Buttons active **(2)**
  = saved parameter set

- The memory keys are assigned by selecting the memory key in the pull-down menu **(3).**
  The names of the memory keys are defined in the Basic settings menu (see section 10.4 on page 19)

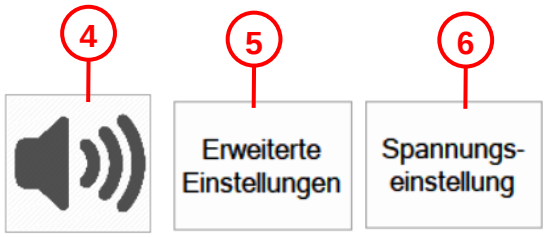


Fig. 34

- “Loudspeaker” button **(4)** goes to the “Sound settings” menu.
- “Advanced settings” button **(5)** goes to the “Advanced settings” menu.
- “Voltage setting” button **(6)** goes to the “Voltage setting” menu.

10.6.3 Advanced settings

- Read, clear and save the event history
- Select and start firmware update.
- Display of the hardware version of the SIL3 and feature part.
- Display of the firmware version of the SIL3 and feature part.
- “Loudspeaker” button goes to the “Sound settings” menu.
- “Voltage setting” button goes to the “Voltage setting” menu.
- “Save to file” button reads the event history as a txt file.

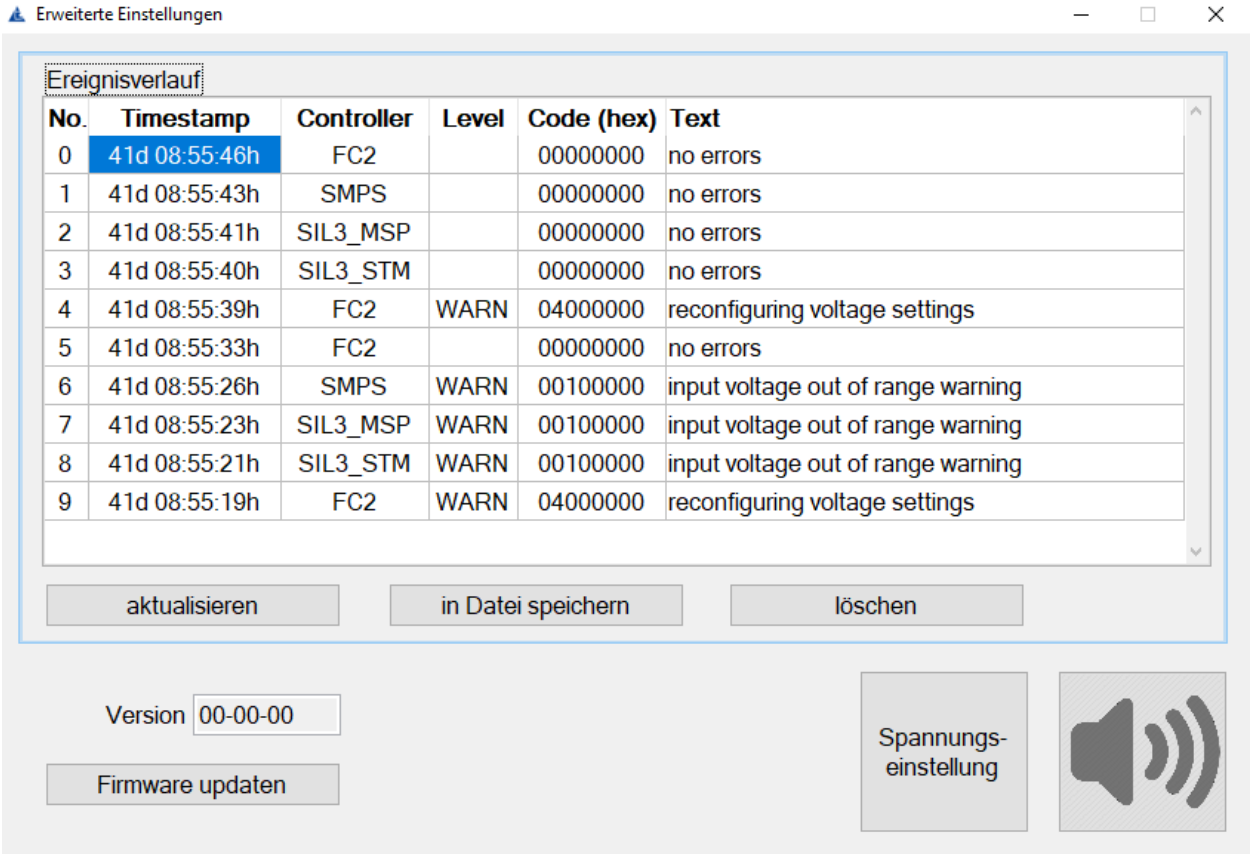


Fig. 35

11 Accessories

Designation	Langmatz Item no.	Sample illustration of the product
sgManager software • Compatible with Windows 7 – 8 – 10. For setting, saving, editing. • Download sgManager: http://langmatz.de/en/service/customer-service/ Download portal: https://kundenportallangmatz.globalconcepts-cloud.de/Login.html		
Software dongle for sgManager	125980999	
Drilling jig	700663080	
Load module LS-Load V1	125980930	

12 Maintenance

Measures	Intervals	Remarks
External visual inspection	At least every 12 months or during maintenance measures on the complete installation.	Check the device for external dirt and damage. **Note:** do not use abrasive cleaning agents or solvents to clean the housing.
Carry out a complete function test (see Chapter 9)		In the event of a defect, send the device with a description of the fault to Langmatz GmbH.

13 EU Declaration of Conformity

The product meets the requirements of the following applicable harmonisation directives:

2014/30/EU	Electromagnetic Compatibility (EMC)
2014/35/EU	Low Voltage Directive (LVD)

The following standards were complied with:
DIN EN 50293:2013 (EMC)
DIN EN 50556:2019 (LVD)
DIN 32981:2018-06
DIN EN 61508:2011 SIL3

The EU Declaration of Conformity for this product can be requested from Langmatz GmbH.

14 Questions / Answers / FAQ sgManager

http://langmatz.de/en/service/customer-service/

Issue	Solution

15 Material defects

Langmatz accepts liability for material defects in the product as per Section 434 BGB (German Civil Code) for 24 months, starting from the date on the purchase receipt.

Within the scope of liability, all parts that become damaged due to manufacturing faults or material defects will be replaced or repaired free of charge.
The purchaser must report any deficiency complaints immediately in writing.
Claims by the purchaser for damages due to material defects or for whatever legal reason will not be accepted.

Any damage or failure caused by the following are also excluded from liability:
- incorrect use,
- natural wear and tear,
- intervention by third parties.

We accept no liability for damage caused by force majeure or transport.

Repairs due to a complaint about a defect do not extend the warranty period for the replaced parts or for the product.

This product conforms to the latest state-of-the-art technology. Nevertheless, if you experience any problems with it, please contact our hotline (**section 18 on page 28**).

16 Quality management

The Langmatz GmbH quality management system is certified to DIN EN ISO 9001.

17 Disclaimer/Warranty

The information in this technical document is presented appropriately and correctly in compliance with the technical regulations, and to the best of our knowledge. However, this does not confer any guarantee of particular characteristics. In this context, the company that operates the products supplied by Langmatz GmbH is expressly obliged to decide, based on its own judgement, whether the products are suitable and appropriate for the application or use being considered. The product liability accepted by Langmatz GmbH relates exclusively to our conditions of sale, delivery, and payment. Langmatz GmbH accepts no liability on the basis of random, indirect and resultant consequential damage, or of any damage attributable to any use of the product other than its intended purpose as described.

18 Contact

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