

Operating Instructions

Signal Requesting Device
for pedestrians and the visually impaired
EK 527



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1 General information

These instructions are a component of the delivery.



Note:

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

Operate the product only on road traffic signal systems that meet Class X1 criteria in accordance with DIN EN 50556:2018. At least one of the following classes must be complied with as per DIN EN 12675:2017: Class AA1; Class AD1.

In the interest of further development, we reserve the right to change individual assemblies and accessories as considered necessary for enhanced safety and performance improvements, while preserving the main features. The copyright of these instructions remains with Langmatz GmbH.

2 Safety information

The product complies with the latest 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 be opened only 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 at mains voltage.

Comply with 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.
- Preventing downtime and environmental impact due to incorrect handling.
- Ensuring that protective clothing is worn when working with or on the product.

It is forbidden to use the product if it is damaged. Please contact the hotline (see section 19 Contact). It is also prohibited to supply the devices with power from the red signal on the traffic light pole, because LED signal failures are not recognised by the signal safeguard (red signal monitoring) in the control unit, due to the current flow of the additional device.



Note:

Comply with applicable occupational safety and environmental protection regulations during installation, operation, maintenance, and repair.

3 Product description

These instructions essentially describe installation and operation of the Langmatz signal requesting device for pedestrians and the visually impaired.

3.1 Dimensions

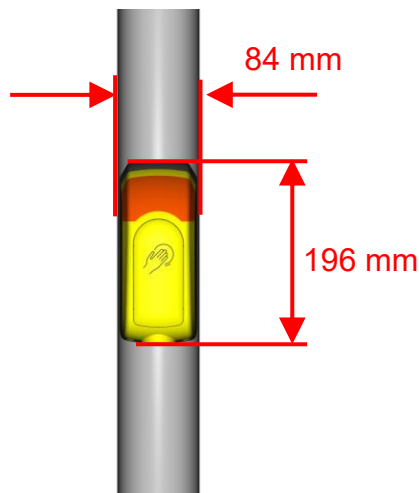


Fig. 1

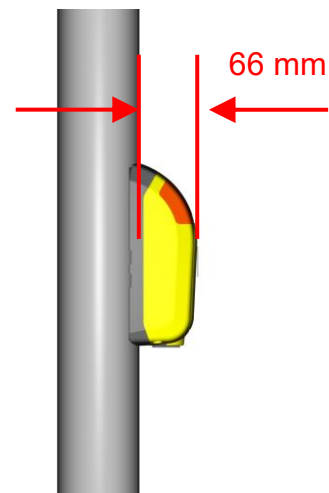


Fig. 2

3.2 Technical data

Designation	EK527 signal requesting device for pedestrians and the visually impaired
Nominal voltage Visual feedback signal, potential-free switch	24 V AC/DC 40 VAC
Supply	12 VDC (Soundguide) 24 V AC/DC 40 VAC
Housing colour	Yellow, similar to RAL 1023, solid coloured, UV-stabilised.
Housing material	Polycarbonate (PC)
Protection class	II
Protection rating	IP54
Power consumption	3 Watts
Mounting	2x M6x25/A2 hexagon socket head bolts
Pole adapter (protection against vandalism)	Universal, stainless steel, suitable for: Ø78 mm – Ø230 mm and wall installation (included in delivery).
Ambient temperature	-25°C to +60°C
Height / Width / Depth	196 mm / 84 mm / 63 mm / push-button 66 mm (distance from the pole)
Weight	Approx. 850 g (excluding packaging)
Connection cable	12 x 0.5 mm ² with bootlace ferrules

3.3 Block diagram

- (1) Visual feedback signal with flashing function and self-acknowledgement logic
- (2) Acknowledgement sound upon signal request
- (3) Guide sound from pedestrian signal requesting device (loudspeaker).
- (4) Vibrator actuation via Soundguide EK598 or road traffic signal system
- (5) 12 V supply via Soundguide EK598 or 24 V / 40 V road traffic signal system
- (6) Signal request via a sensor or potential-free push-button
- (7) Vibrating push-button, potential-free
- (8) Adjustable NC/NO switching outputs

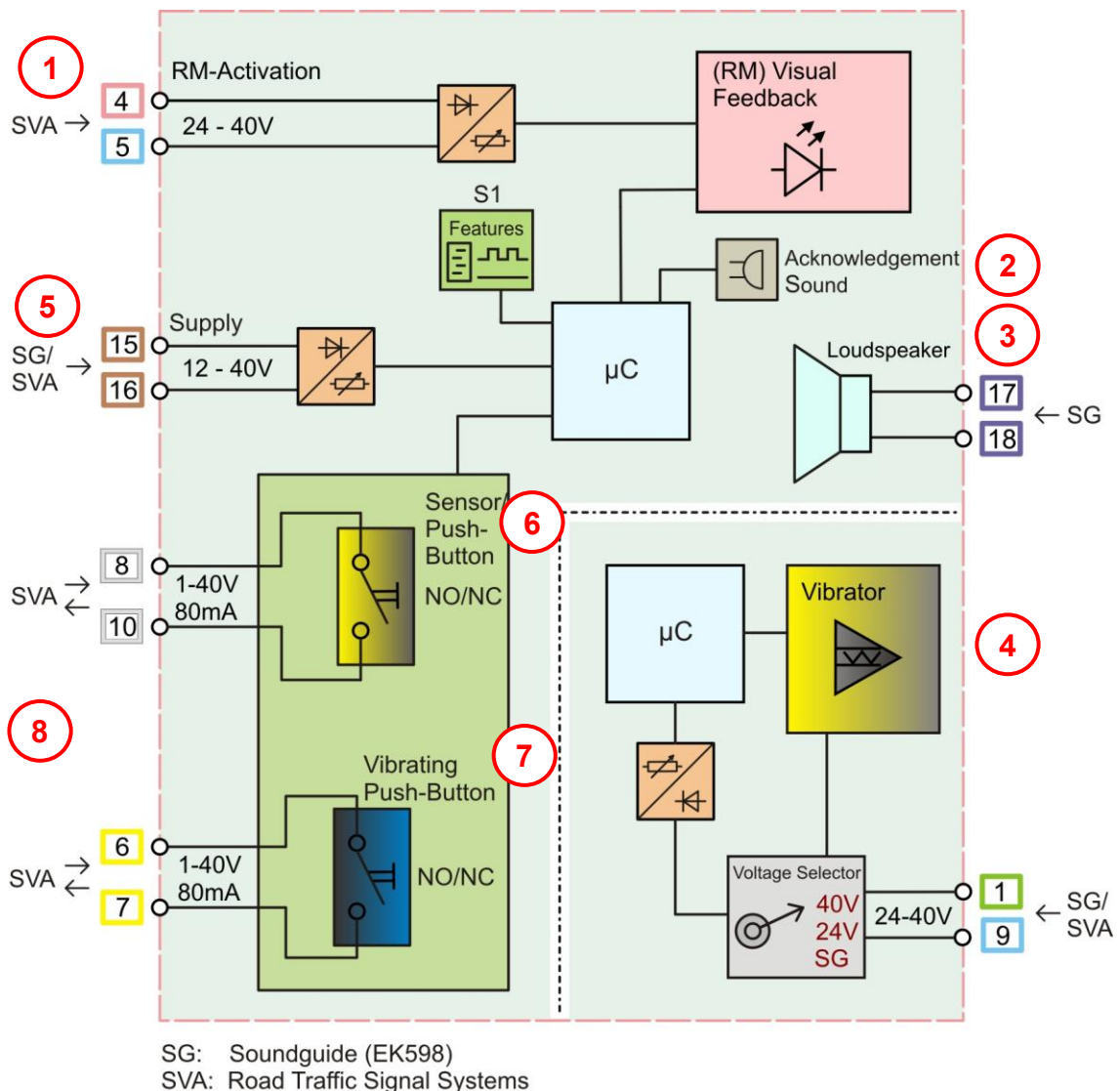


Fig. 3



Note:
Max. current 80 mA for the request signal

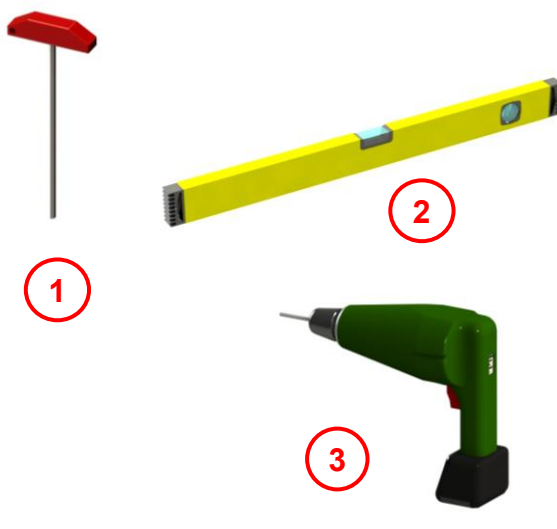
3.4 Package includes



- Item 1** 1x Pedestrian signal requesting device type “” with connection cable
- Item 2** 1x Drilling template (self-adhesive paper)
- Item 3** 4x Tactile pedestrian crossing symbols
- Item 4** 1x Special key

Fig. 4

3.5 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
 Thread cutter
 Strap

Fig. 5

4 Functional description

4.1 Supply

The power supply is provided with polarity protection via the wide voltage input via the

- Soundguide EK598 or,
- via the road traffic signal system with 24V / 40V.

Clamp the wires together according to the numbering.

Designation	Core
Supply	15 (BN)
Supply	16 (BN)

4.2 Tactile signalling device

The tactile signal generator (vibrator) can be controlled by the

- Soundguide EK598 or,
- the road traffic signal system.

When controlled by the Soundguide, clamp the wires together according to the colour markings. Alternatively, take the control from the road traffic signal system. Set slide switch S2 according to the voltage range (Chapter 6).

Designation	Core
Tactile signalling device	9 (BU)
Tactile signalling device	1 (GN)
Input power	<0.5 W

4.3 Visual feedback signal

The acknowledgement LED is actuated directly by the road traffic signal system and can be operated at nominal voltages of 24 and 40 V. Flashing mode can be set using the dip switches (S1.1, see section 6).

Designation	Core
Visual feedback signal	5 (BU)
Visual feedback signal	4 (PK)

5 Signal request

5.1 Signal request by vibrating push-button

The switching output is factory-configured as an NO contact and can be converted using switch S1.5 to an NC contact (Fig. 6). A correct supply voltage is required.

Designation	Core	
Vibrating push-button	6/7 (YE)	Potential-free switching output
Contact types		NC/NO
Switching voltage		Max. 48 V AC/DC
Switching current		Max. 80 mA

5.2 Signal request by push-button or touch sensor

The switching output is factory-configured as an NO contact and can be converted using switch S1.4 to an NC contact (see section 10). A correct supply voltage is required.

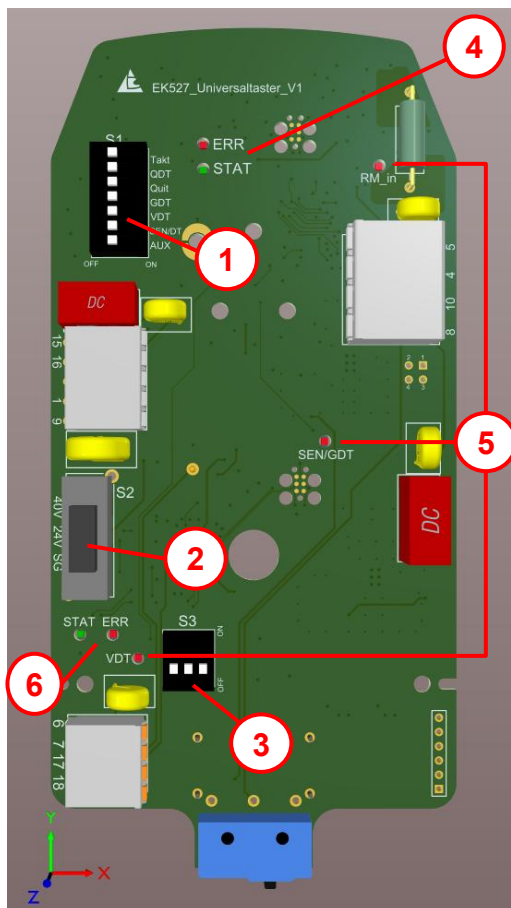
Designation	Core	
Large-surface sensor	8/10 (WT)	Potential-free switching output
Contact types		NC/NO
Switching voltage		Max. 48 V AC/DC
Switching current		Max. 80 mA

5.3 Loudspeaker

The loudspeaker must be connected to the Soundguide via cores 17 and 18. The guide sound is then also emitted by the pedestrian signal requesting device.

Loudspeaker	400 – 20,000 Hz / 2 W / 4 ohms
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6 Switch settings and functions



- Item 1** S1 Functions for visual feedback signal and request
- Item 2** S2 Slide switch for vibrator control
- Item 3** S3 Functions for vibrator are active only if S2 is in middle or top position
- Item 4** Error and status LEDs feature area
- Item 5** Status LEDs input and output
- Item 6** Error and status LEDs vibrator area

Fig. 6

6.1 Status LEDs

Item 4:

The error and status LEDs in the upper area show the state of the feature area. When the device starts, the LEDs flash alternately. Once initialization is complete, the green status LED lights up continuously. If an error occurs, the error LED lights up continuously. If a setting is made on the DIP switch S1, the device reinitializes itself.

Item 5:

The RM_in LED lights up when there is a signal at the optical feedback input. The SEN/GDT and VDT LEDs light up when the switching outputs are active.

Item 6:

The error and status LEDs in the lower area show the status of the vibrator area. If the correct voltage range is set, the green status LED lights up. If controlled by sound guide, the LED flashes. If a signal is outside the set voltage range, the red error LED lights up; if controlled by sound guide, the LED flashes.

6.2 Settings

Item 1 / S1 Functions for visual feedback signal and request				
Switch	Mode	OFF	ON	Description
S1.1	Takt (Clock)	Feedback signal is controlled by the road traffic signal system	Pedestrian signal requesting device controls the flashing	In flashing mode, the feedback signal is switched to flashing when cores 4 and 5 are actuated or in APB mode
S1.2	QDT (APB)	Road traffic signal system sets the feedback signal	Pedestrian signal requesting device sets the feedback signal	APB = Visual acknowledgement by push-button or sensor. The device independently acknowledges the signal request through a visual feedback signal. The visual feedback signal is reset when the pedestrian green voltage is applied to the feedback input (cores 4 and 5). A short pulse of 50 – 500 ms is sufficient for this.
S1.3	Quit (AS)	No sound when request is made	Sound is emitted when request is made	AS = Acknowledgement sound. The acknowledgement sound is emitted from the integrated buzzer and audibly confirms the signal request
S1.4	GDT (Switch output LPB/sensor)	NO	NC	LPB = Large-surface push-button

S1.5	VDT (Switch output VPB)	NO	NC	VPB = Vibrating push-button
S1.6	SEN / DT	Sensor	Push-Button	Switch between the two detection modes, by request form Push-Button
S1.7	AUX	Not in use	Not in Use	

Item 2 / S2 Slide switch for vibrator control		
Switch position	Mode	Description
S2 Top	Road traffic signal system 40 V	Vibrator is operated on a 40 V road traffic signal system (switch S3 is active)
S2 Middle	Road traffic signal system 24 V	Vibrator is operated on a 24 V road traffic signal system (switch S3 is active)
S2 Bottom	Soundguide	Vibrator is operated by the Langmatz Soundguide acoustics (switch S3 is not active)

Item 3 / S3 Functions for vibrator are active only if S2 is in middle or top position				
S3.1	S3.2	S3.3	Clock interval	Description
ON	ON	OFF	1 Hz	Clock interval of the vibration. On time is the same as off time
OFF	OFF	OFF	2 Hz	
OFF	ON	OFF	4 Hz	
ON	OFF	OFF	6 Hz	
ON	ON	ON	-	Vibrator vibrates continuously (by release signal)

7 Sensor/push-button conversion

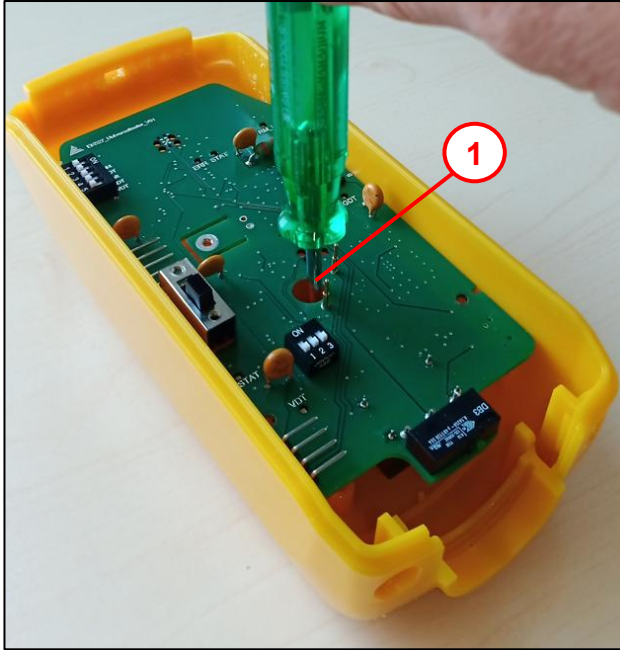


Fig. 7

Depending on the device type, we recommend setting the DIP switch S1.6 to the appropriate position as described in Chapter 6.2.

The EK527 can be converted from a push-button device to a sensor device and vice versa.

To convert from a sensor to a push-button device the screw **(1)** must be screwed out counterclockwise 5 turns. The push-button is now raised on the device and can be actuated.

To convert from a push-button to a sensor device the screw must be screwed in clockwise 5 turns. The push-button moves into the button and forms a smooth sensor surface.

8 Safety key indicators

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

Interval between unit inspections Time between periodic safety checks	T1	1 year
Average frequency of a hazardous failure of the safety function Probability of failure per hour	PFH	$2,6 \times 10^{-9} \text{ h}^{-1}$
Percentage of safe failures Safe failure fraction	SFF	1
An HFT = N indicates that N + 1 hardware faults, unfavourably distributed, will lead to a loss of the safety function Hard fault tolerance	HFT	0
Type E/E/PE system		Type B
Response time in event of errors Failure response time		1 sec
Safe state Safe state		"Wrong-side" green display is prevented

9 Installation

9.1 Drilling installation holes on the pole

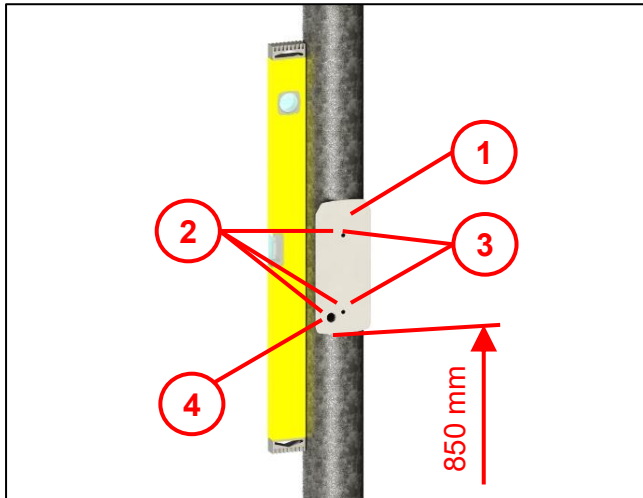


Fig. 8

We recommend using a spirit level to ensure correct levelling.

- Remove the protective film from the drilling template **(1)**.
- Attach the drilling template to the pole so that the bottom edge of the template is 850 mm above the footpath.
- Punch-mark 3 drill holes **(2)**.
- Drill 2 holes having a diameter of 5 mm **(3)** (for mounting).
- Cut 2 M6 threads **(3)**.
- Drill 1 hole having a diameter of 14 mm **(4)** (for the cable duct).

Langmatz recommends using a metal drilling jig.

Langmatz item no. 700663080.

See also section 12 Accessories.

9.2 Opening the pedestrian signal requesting device

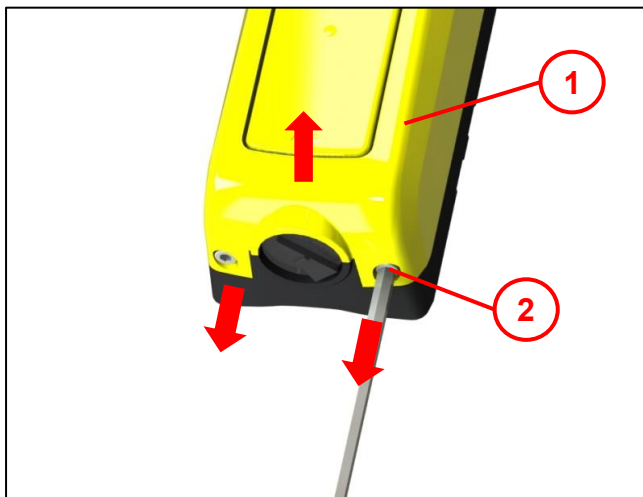


Fig. 9

- Open the pedestrian signal requesting device.
- Open the 2 locking screws **(2)** using a size 4 Allen key and remove the top part **(1)** of the device.

9.3 Mounting the bottom part of the pedestrian signal requesting device

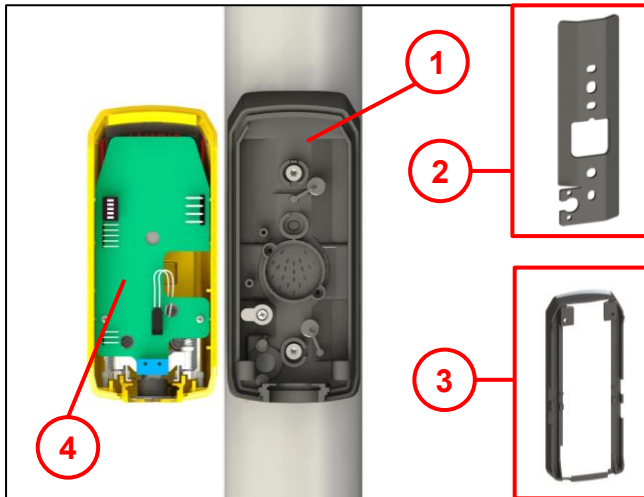


Fig. 10

Note:

For ease of installation, unplug all connectors from the PCB in the top part of the housing (4), by pulling them towards the centre.

The bottom part (1) of the device is pre-assembled with the steel pole adapter (protection against vandalism) (2) and (flexible) pole adapter (3).

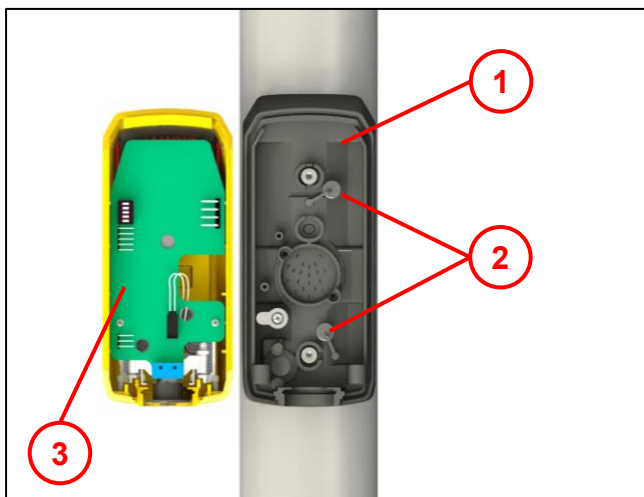


Fig. 11

- Remove the plastic caps (captive) (2).
- Fasten the bottom part (1) of the device to the pole using 2 M6x25 fastening screws.

Note: Torque = 5 Nm.

- Check that the pedestrian signal requesting device is seated correctly on the pole.
- Put on the plastic caps (captive) (2) again.
Note: Check that they are seated correctly. (Protection class!)
- Reconnect all connectors to the PCB in the top part of the housing (3).
- Connect the connection cable to the cable distributor in accordance with the block diagram (see section 3.3). Unused cores must be insulated.

A function test must be carried out when the pedestrian signal requesting device has been installed.

9.4 Installation of a replacement device (hole spacing 80 mm)

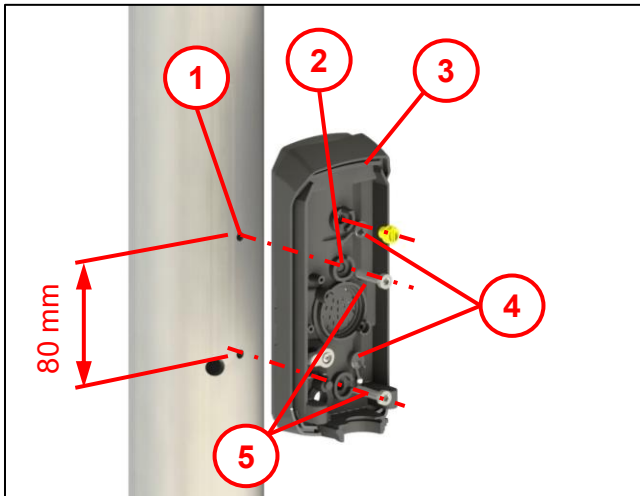


Fig. 12

- If mounting holes (1) already exist (thread spacing 80 mm), a predetermined breaking point (2) can be opened in the bottom part (3) of the device.
- Remove the plastic caps (captive) (4).
- Open and deburr the predetermined breaking point.
- Fasten the bottom part of the device to the pole using 2 M6x25 fastening screws (5).
Note: Torque = 5 Nm.

- Check that the pedestrian signal requesting device is seated correctly on the pole.

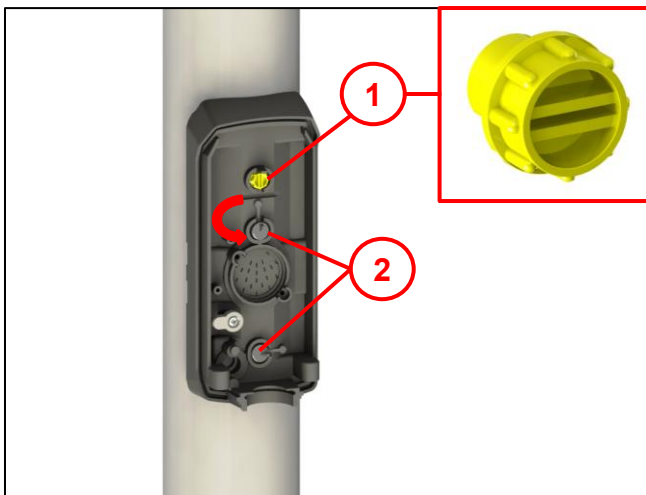


Fig. 13

- Close the upper housing hole using a sealing plug (1) (yellow – accessories kit).
- Turn the plastic caps (captive) (2) downwards and mount them onto the fastening screws.
Note: Check that they are seated correctly. (Protection class!)
- Connect the connection cable to the cable distributor in accordance with the block diagram (see section 3.3). Unused cores must be insulated.

A function test must be carried out when the pedestrian signal requesting device has been installed.

9.5 Aligning the tactile pedestrian crossing symbol

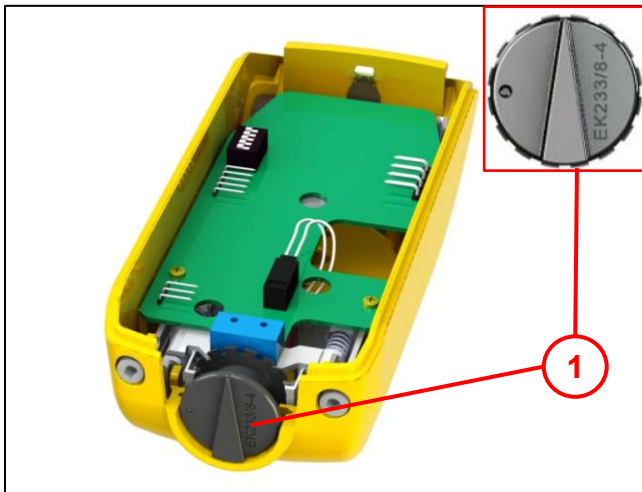


Fig. 14

The pedestrian signal requesting device is factory-fitted with a tactile pedestrian crossing symbol (1). If the specified direction of the tactile pedestrian crossing symbol does not match the direction required, then proceed as described below.

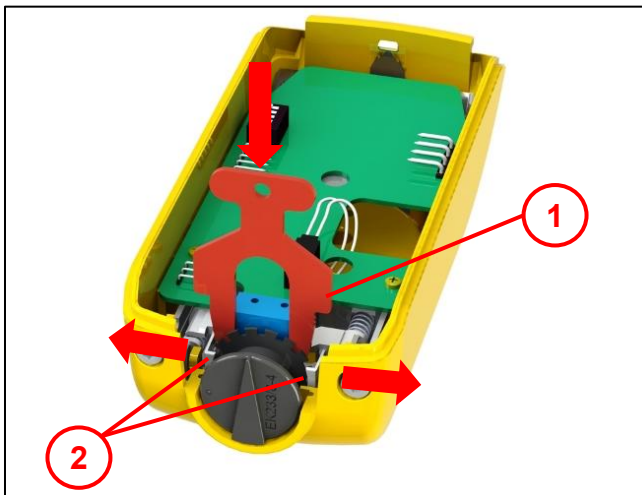


Fig. 15

- Insert the special key (1) behind the tactile pedestrian crossing symbol and press down.
- The brackets (2) are opened.

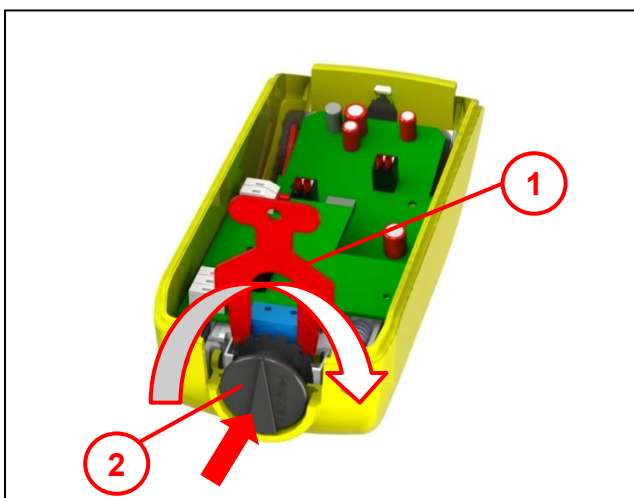


Fig. 16

- Press the tactile pedestrian crossing symbol (2) in slightly and disengage it.
- Turn the tactile pedestrian crossing symbol in the required direction.
Note: The fitted spring must not fall out.
- Remove the special key (1).
- Release the tactile pedestrian crossing symbol and re-engage it.
Note: Check that the built-in seal is correctly seated.

9.6 Replacing the tactile pedestrian crossing symbol

9.6.1 Description of the tactile pedestrian crossing symbols for the visually impaired DIN 32981

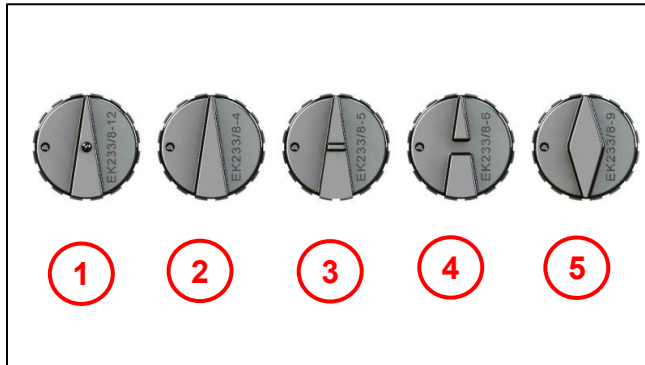


Fig. 17

Item 1 Crossing with an additional request

Item 2 Single crossing (factory-fitted)

Item 3 Crossing with central island

Item 4 Crossing with level crossing

Item 5 Crossing in two directions

Further information describing the symbols and their functions is specified in DIN 32981.

9.6.2 Installation of the tactile pedestrian crossing symbol

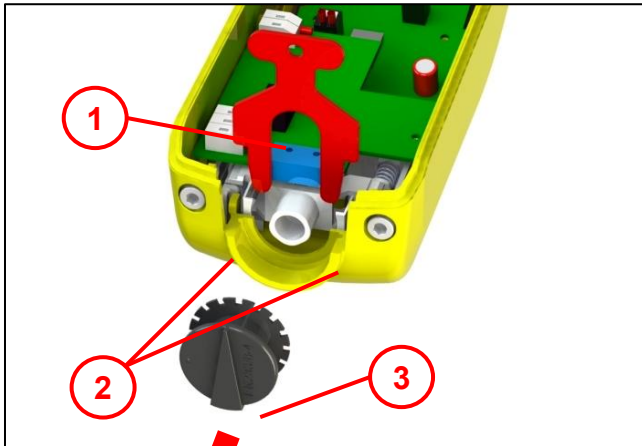


Fig. 18

- Open the brackets (2) using the special key (1) (as described in section 9.5).
- Press the tactile pedestrian crossing symbol (3) in slightly and disengage it.
- Fully pull out the complete tactile pedestrian crossing symbol downwards.

Note: The tactile pedestrian crossing symbol is spring-loaded. Catch the spring when pulling it out.

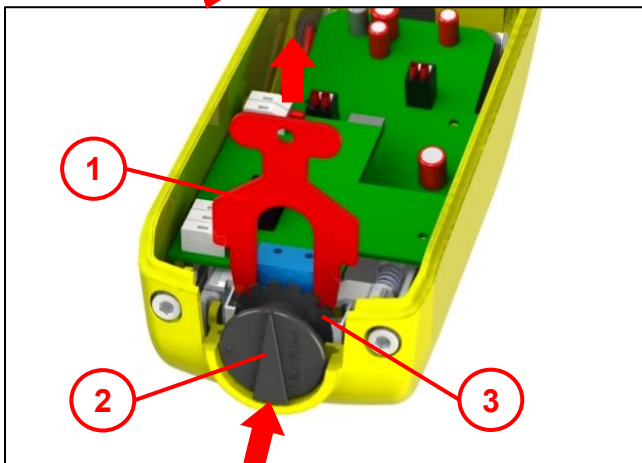


Fig. 19

- Insert the new tactile pedestrian crossing symbol (2)
- Turn the tactile pedestrian crossing symbol in the required direction.
Note: The fitted spring must not fall out.
- Remove the special key (1).
- Release the tactile pedestrian crossing symbol and re-engage it.
Note: Check that the built-in seal (3) is correctly seated.
- Close the device again.

10 General description of functions

10.1 Vibration

The vibrator (tactile signalling device) must be connected only to the monitored output of the Soundguide EK598 or, if the switch is set accordingly, to a monitored control output from the road traffic signal system.

The vibration clock rate adapts to the crossing signal only when the Soundguide is connected.

10.2 Vibrating push-button (VPB)

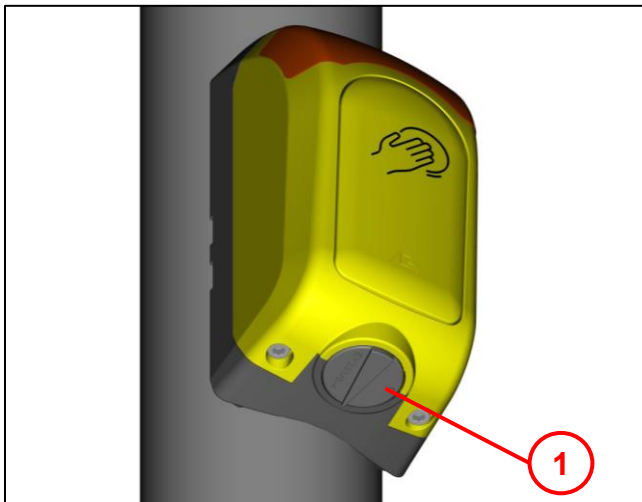


Fig. 20

The VPB is factory-supplied as an NO contact and can be switched over to NC if required (see section 6).

Important:

When the installation work is complete, check that the vibrating push-button works correctly with the tactile pedestrian crossing symbol (1).

Trigger a signal request by means of the vibrating push-button and check the function.

While the tactile pedestrian crossing signal is active, it must be possible to feel clearly noticeable vibration.

10.3 Signal request through sensor or large-surface push-button

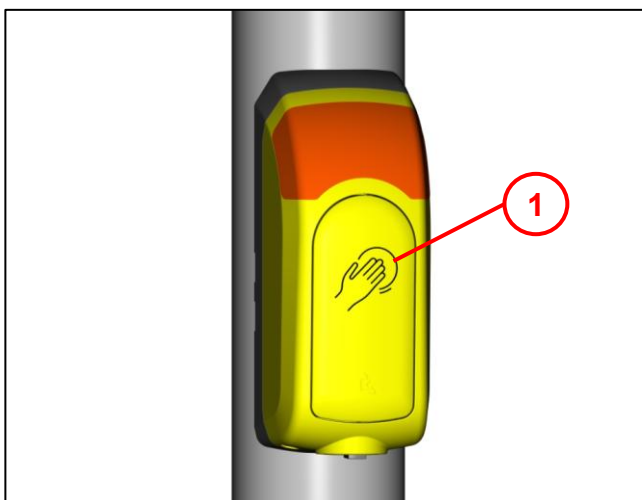


Fig. 21

Depending on the version, the signal is requested by touching the sensor surface or by pressing the large-surface push-button (1). The conversion between versions is described in section 7.

The request is factory-supplied as an NO contact and can be switched over to NC if required (see section 6).

10.4 Loudspeaker

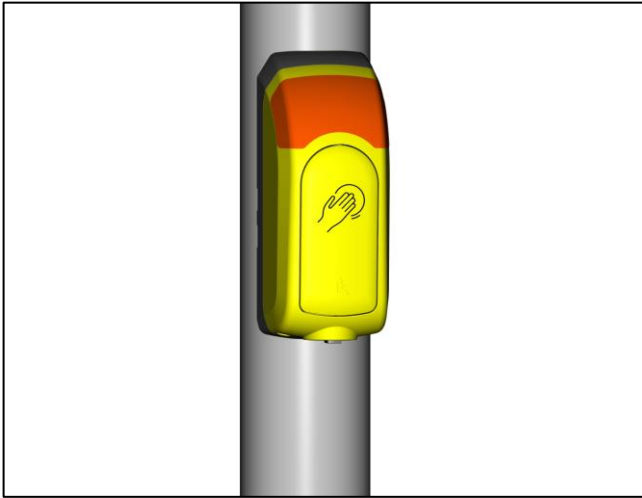


Fig. 22

If desired, the orientation sound from the Soundguide can be played on the internal speaker of the EK527.

11 Functional checks

11.1 General

Document the location and serial number of the device.

11.2 Functional checks of the feedback signal

- 1.) Confirm that the settings of S1 meet the requirements of the customer's system.
- 2.) Depending on the settings
 - Check acknowledgement sound when request is made
 - Functional check of feedback signal in the signalling sequence
 - Requesting of the green phase via the push-button
 - Requesting of the green phase via the vibrating push-button

11.3 Functional checks of the vibrator

11.3.1 Vibrator operation via Soundguide

- 1) Confirm that the slide switch S2 is set to Soundguide mode (see section 6).
- 2) A function test should be carried out in conjunction with the Soundguide EK598 (see section 9 Operating Instructions for EK598 Soundguide).


11.3.2 Vibrator operation via road traffic signal system

- 1) Confirm that the slide switch S2 is set to road traffic signal system mode (see section 6) and that the correct voltage has been selected.

11.3.3 Functional checks of the vibrating push-button

- Requesting of the green phase via the vibrating push-button
- Selection and alignment of the tactile pedestrian crossing symbol (see section 9).

12 Accessories

Designation	Langmatz item no.	Example illustration of the product
Drilling jig	700663080	

13 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 aggressive cleaning agents or solvents to clean the housing.
Check the tactile pedestrian crossing symbol		Check correct alignment and the corresponding tactile pedestrian crossing symbol.
Carry out a complete function test.		In the event of a defect, send the device with a description of the fault to Langmatz GmbH.

14 Decommissioning, disposal

Proper decommissioning is carried out in accordance with the specifications of the operator of the traffic light controller.

Old electrical appliances do not belong in residual waste/household waste, but must be collected separately for disposal. This ensures old electrical appliances are recycled.



We are happy to support you in organising collection. We co-operate with a service provider who will dispose of your old electrical appliances if necessary. We are duly registered in the public register of manufacturers of the EAR under DE91097483.

15 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:

EN 50293:2013 (EMC)
EN 50556:2019
DIN 32981:2018-06
DIN EN 61508 SIL1

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

16 Material defects

Langmatz GmbH 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 (see section 19 Contact).

17 Quality management

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

18 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.

19 Contact

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