



PIT gb

PILZ
THE SPIRIT OF SAFETY

► Control and signal devices

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SD means Secure Digital

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1 Introduction

1.1 Validity of documentation

This documentation is valid for the product PIT gb. It is valid until new documentation is published.

This operating manual explains the function and operation, describes the installation and provides guidelines on how to connect the product.

1.2 Using the documentation

This document is intended for instruction. Only install and commission the product if you have read and understood this document. The document should be retained for future reference.

1.3 Definition of symbols

Information that is particularly important is identified as follows:



DANGER!

This warning must be heeded! It warns of a hazardous situation that poses an immediate threat of serious injury and death and indicates preventive measures that can be taken.



WARNING!

This warning must be heeded! It warns of a hazardous situation that could lead to serious injury and death and indicates preventive measures that can be taken.



CAUTION!

This refers to a hazard that can lead to a less serious or minor injury plus material damage, and also provides information on preventive measures that can be taken.



NOTICE

This describes a situation in which the product or devices could be damaged and also provides information on preventive measures that can be taken. It also highlights areas within the text that are of particular importance.






INFORMATION

This gives advice on applications and provides information on special features.

2 Overview

2.1 Unit features

- ▶ Slimline design
- ▶ Housing with 12-pin M12 male connector
- ▶ Control elements can be replaced with a new control element with the same design in the event of repair
- ▶ Labelling option for individual marking of the control elements
- ▶ Control elements finally wired and installed
- ▶ Can be installed in different directions (see [Assembly positions](#)  13])
- ▶ Coloured caps for marking the function of the control elements (see [Order reference: Accessories](#)  48])
- ▶ Housing with E-Stop pushbutton, pushbutton and mushroom head pushbutton

The housing is available in three versions. In figures the version with E-Stop is displayed. For further information see [Design and device types](#)  10].


2.2 Scope of supply

- ▶ PIT gb
- ▶ 2 washers M5
- ▶ Coloured caps (set), sorted by colour


3 Safety

3.1 Intended use

The unit PIT gb is intended for use in safety circuits in accordance with IEC/EN 60947-5-5, EN ISO 13850. Before using the device, a safety assessment of the overall system must be performed in accordance with the Machinery Directive.

The PIT gb must be used in combination with a suitable evaluation device (see [Connection to evaluation device](#) [ 27]).

The following is deemed improper use in particular:

- ▶ Any component, technical or electrical modification to the product
- ▶ Use of the product outside the areas described in this manual
- ▶ Use of the product outside the technical details (see chapter entitled "[Technical details](#)" [ 31]).

Foreseeable misuse

- ▶ Use of the PIT gb under corrosive environmental conditions (cooling emulsions, surface treatment, gases, ...)

Please contact Pilz.

- ▶ Use of a different object than the intended key when using the key-operated pushbutton or the key switch.
- ▶ Blocking of the key-operated pushbutton or the key switch with a foreign body.

3.2 Safety regulations

3.2.1 Use of qualified personnel

The products may only be assembled, installed, programmed, commissioned, operated, maintained and decommissioned by persons who are competent to do so.

A competent person is a qualified and knowledgeable person who, because of their training, experience and current professional activity, has the specialist knowledge required. To be able to inspect, assess and operate devices, systems and machines, the person has to be informed of the state of the art and the applicable national, European and international laws, directives and standards.

It is the company's responsibility only to employ personnel who

- ▶ Are familiar with the basic regulations concerning health and safety / accident prevention,
- ▶ Have read and understood the information provided in the section entitled Safety
- ▶ Have a good knowledge of the generic and specialist standards applicable to the specific application.

3.2.2 Warranty and liability

All claims to warranty and liability will be rendered invalid if

- ▶ The product was used contrary to the purpose for which it is intended,
- ▶ Damage can be attributed to not having followed the guidelines in the manual,
- ▶ Operating personnel are not suitably qualified,
- ▶ Any type of modification has been made (e.g. exchanging components on the PCB boards, soldering work etc.).

3.2.3 Disposal

- ▶ When decommissioning, please comply with local regulations regarding the disposal of electronic devices (e.g. Electrical and Electronic Equipment Act).


3.3 For your safety



WARNING!

Risk of injury due to loss of the safety function.

Manipulation of the control elements may lead to serious injury and death.

- You should prevent any possibility of the control elements being manipulated through the use of a spare control element.
- Keep the spare control element in a safe place and protect it from unauthorised access.
- If spare control elements are used, these must be installed as described under [Exchange of control elements](#) [ 22].
- Destroy any replaced control elements before disposal.

4 Function description

Depending on the version, PIT gb can provide the following pushbuttons/switches to control the functions of the overall plant or machine:

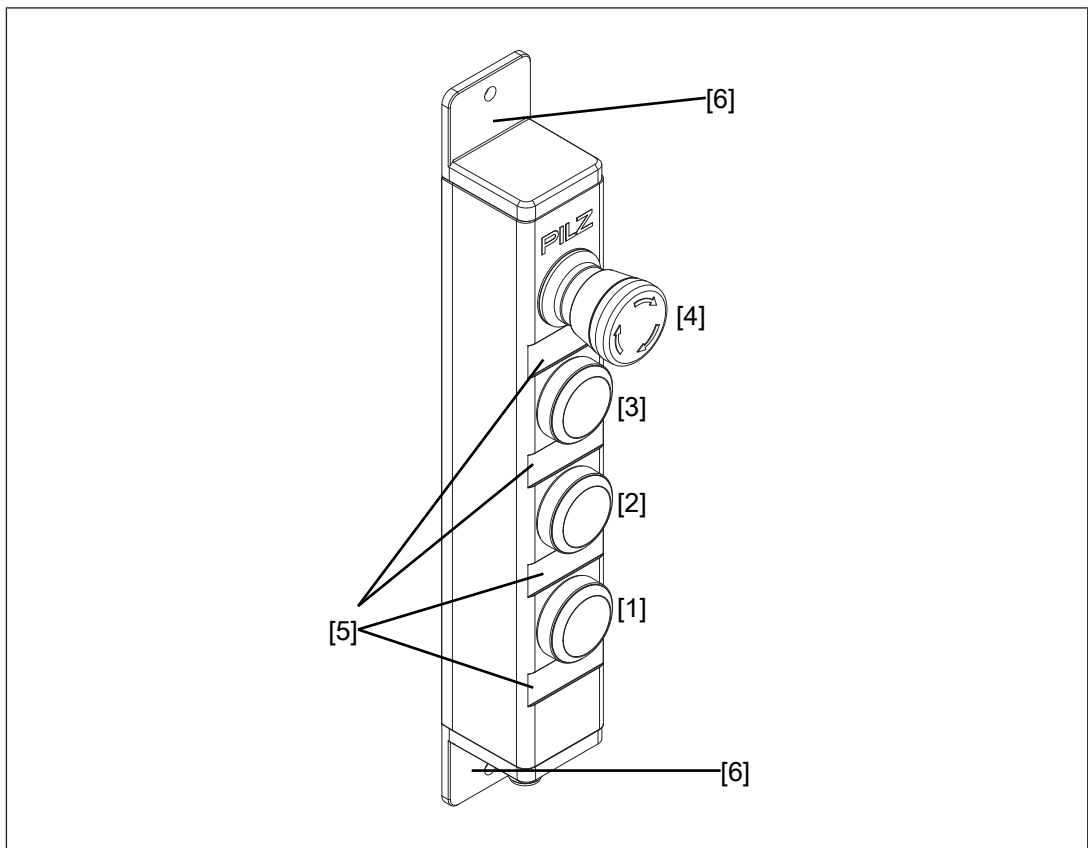
- ▶ Emergency stop pushbutton
- ▶ Illuminated and unilluminated pushbuttons
- ▶ Key switch/key pushbutton
- ▶ Changeover switch

For each control element, PIT gb has an individual labelling option [5] and a rotatable mounting bracket [6].

Dimensions labelling option: Width 35 mm, height 13 mm

- ▶ The control elements can be marked with coloured caps according to the function of the control elements (see [Order reference: Accessories](#)  48)

4.1 Design and device types



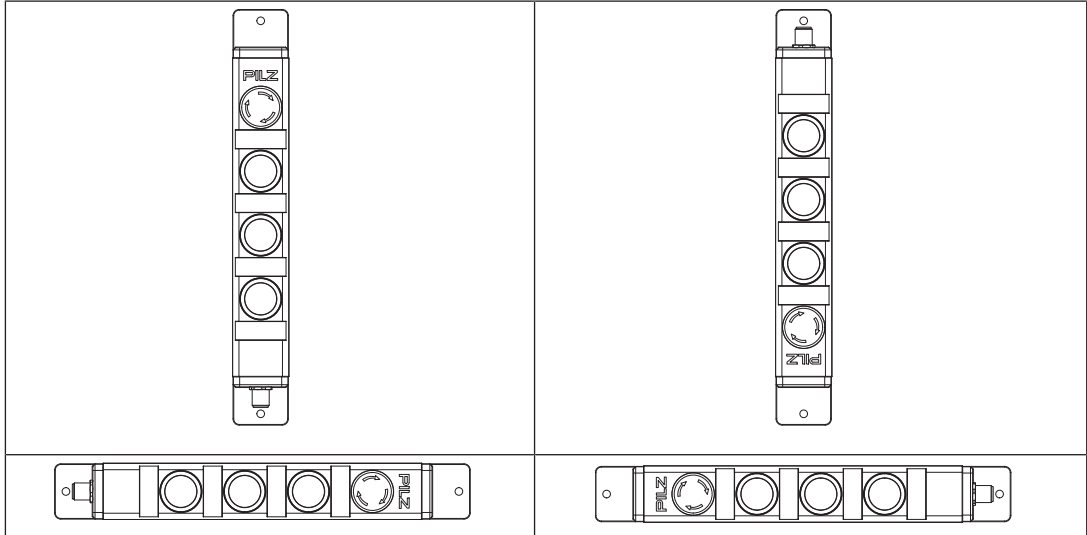
PIT gb	Pushbutton [1]	Pushbutton [2]	Pushbutton [3]	Pushbutton [4]	Signal contact
LLLE	Pushbutton illuminated	Pushbutton illuminated	Pushbutton illuminated	Emergency stop	No
CLLE y	Blind plug	Pushbutton illuminated	Pushbutton illuminated	Emergency stop	Yes
BLLE y	Key switch	Pushbutton illuminated	Pushbutton illuminated	Emergency stop	Yes
KLLE	Key switch	Pushbutton illuminated	Pushbutton illuminated	Emergency stop	No
LLLL	Pushbutton illuminated	Pushbutton illuminated	Pushbutton illuminated	Pushbutton illuminated	No
LLUL	Pushbutton illuminated	Pushbutton illuminated	Pushbutton (1 NC) not illuminated, with blanking plate (red)	Pushbutton illuminated	No
LLTE	Pushbutton illuminated	Pushbutton illuminated	Pushbutton (1 NC) illuminated	Emergency stop	No
CSSE	Blind plug	Pushbutton illuminated, 2 NO	Pushbutton illuminated, 2 NO	Emergency stop	No
LLLP	Pushbutton illuminated	Pushbutton illuminated	Pushbutton illuminated	Mushroom head push-button, black	No
CLLP y	Blind plug	Pushbutton illuminated	Pushbutton illuminated	Mushroom head push-button, black	Yes
WLLE	Selector switch 2 x 60°	Pushbutton illuminated	Pushbutton illuminated	Emergency stop	No
DLLE y	Pushbutton unilluminated	Pushbutton illuminated	Pushbutton illuminated	Emergency stop	Yes
LLME	Pushbutton illuminated	Pushbutton illuminated	Indicator lamp	Emergency stop	No
VMCE	Pushbutton blue	Indicator lamp	Blind plug	Emergency stop	No

- ▶ **Pushbutton generally**
 - The pushbutton is used to switch a signal and as the status display.
 - The pushbutton lights up if the corresponding input is connected.
- ▶ **Key switch**
 - The key switch is used to switch two signals and secure this switching through removal of the key.
 - Three locking positions (90° to the left, start position, 90° to the right)
 - The key can be removed in all three positions.
- ▶ **Key-operated pushbutton**
 - The key-operated pushbutton is used to switch a signal and secure this switching through removal of the key.
 - The key can be removed in the start position.
- ▶ **E-STOP pushbutton**

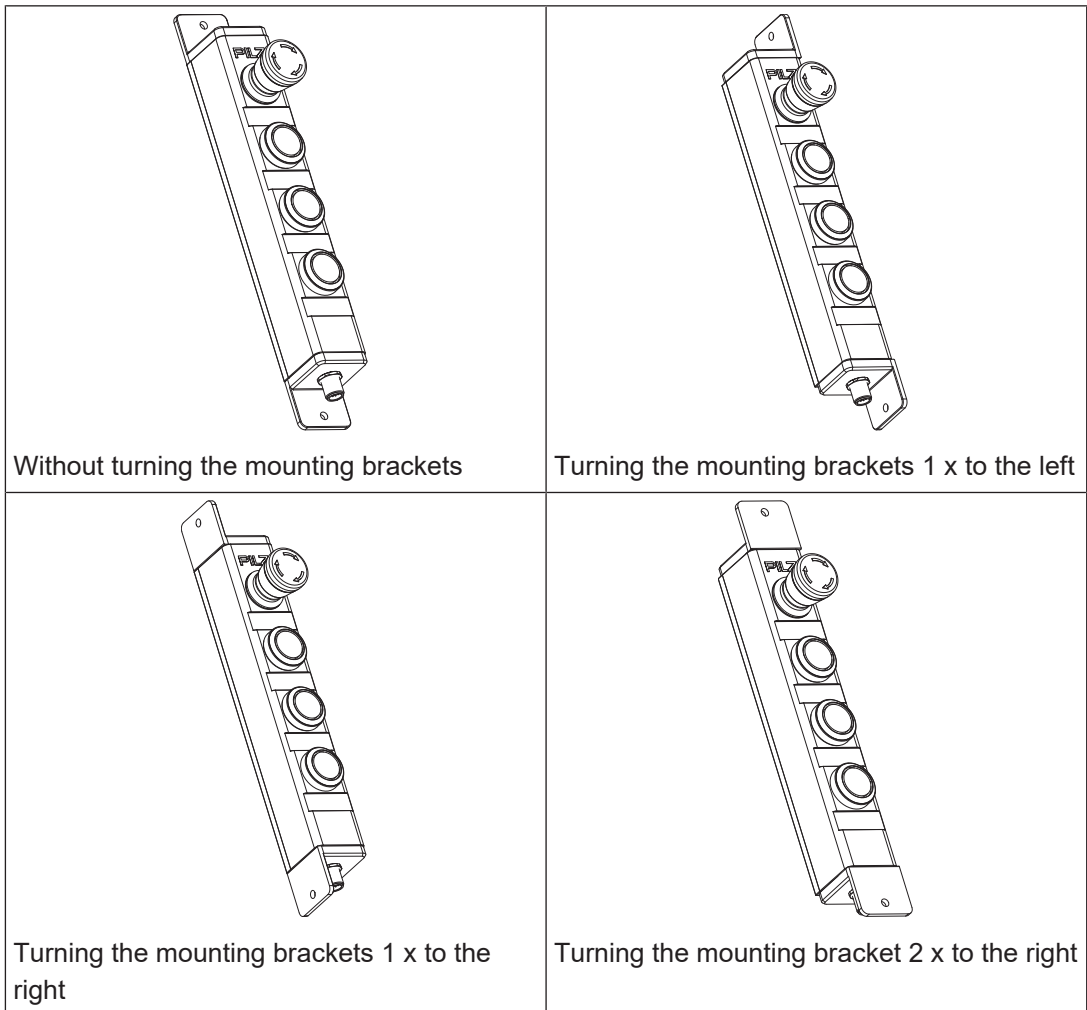
The E-STOP pushbutton is used to shut down plant and machine sections in order to reduce or avert imminent or existing hazards to persons and damage to machinery or materials.
- ▶ **Selector switch**
 - The selector switch is used to switch a signal.
 - Three locking positions (60° to the left, start position, 60° to the right)
- ▶ **Pushbutton unilluminated**
 - The pushbutton is used to switch a signal.
- ▶ **Indicator lamp**
 - The indicator lamp is used as a status display.
 - The indicator lamp lights up if the corresponding input is connected.
- ▶ **Mushroom head pushbutton black**
 - The mushroom head pushbutton is used to switch off plant sections.
- ▶ **Pushbutton not illuminated, with protruding blanking plate red**
 - The pushbutton is used to switch a signal.
- ▶ **Pushbutton not illuminated, protruding blanking plate (blue)**
 - The pushbutton is used to switch a signal.

4.2 Assembly positions

Possible assembly positions for the PIT gb:

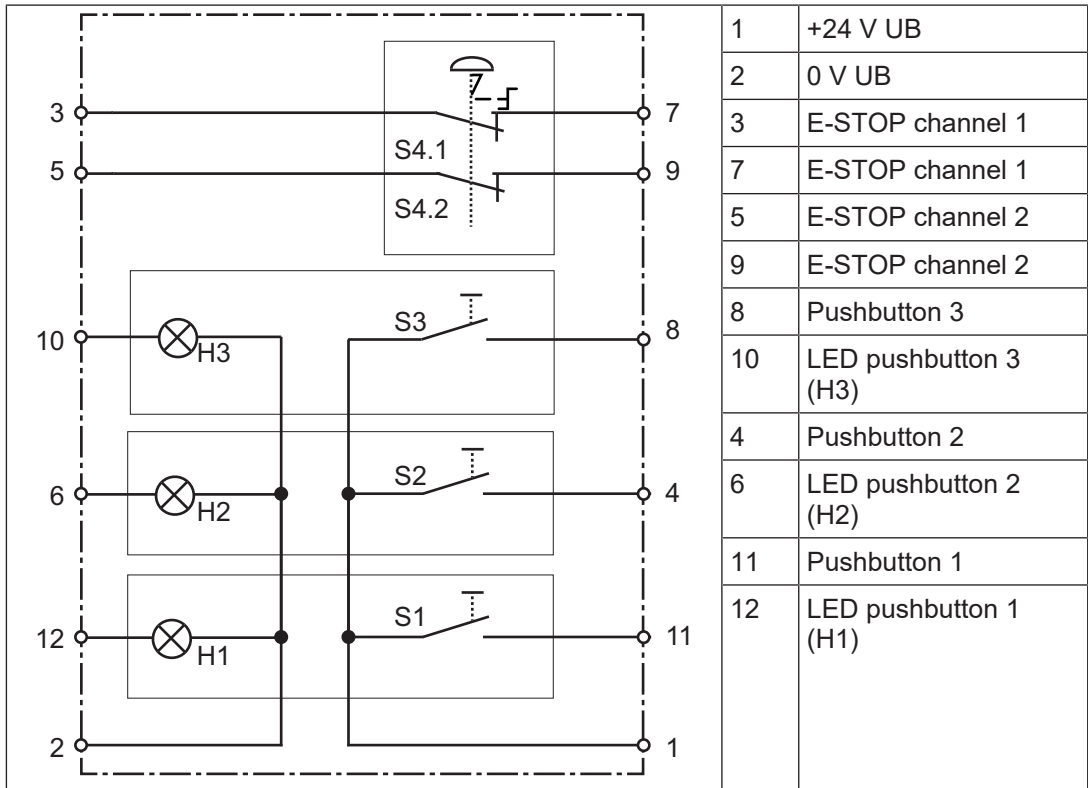


The mounting brackets with which the PIT gb is fastened to the mounting surface can be turned before assembly PIT gb (see figures).

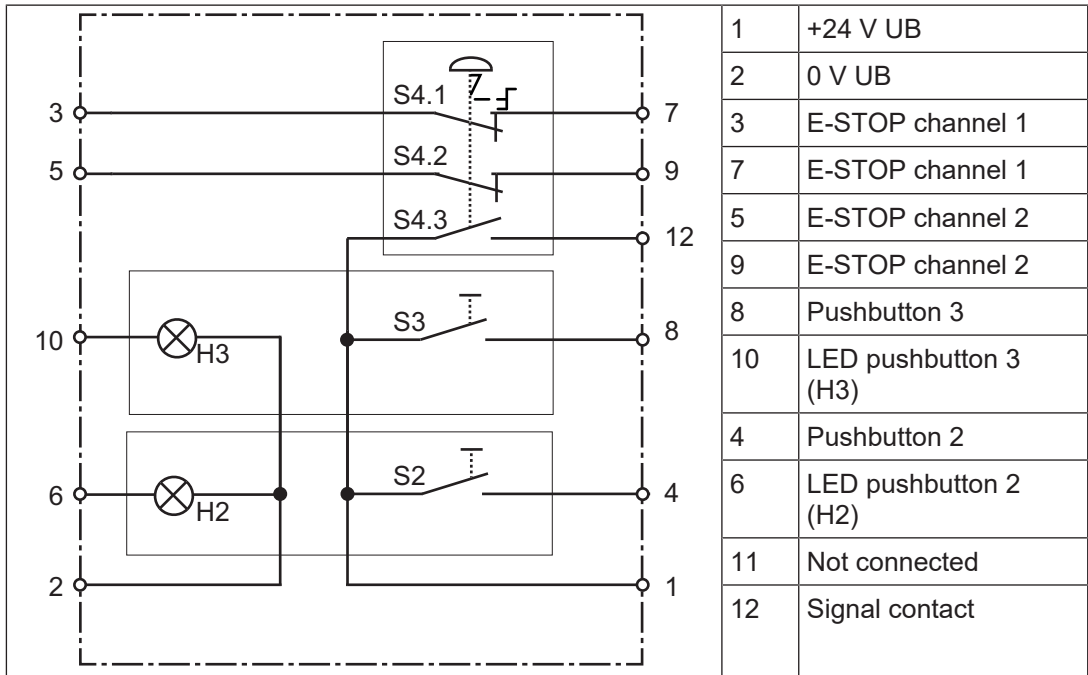


4.3 Block diagrams

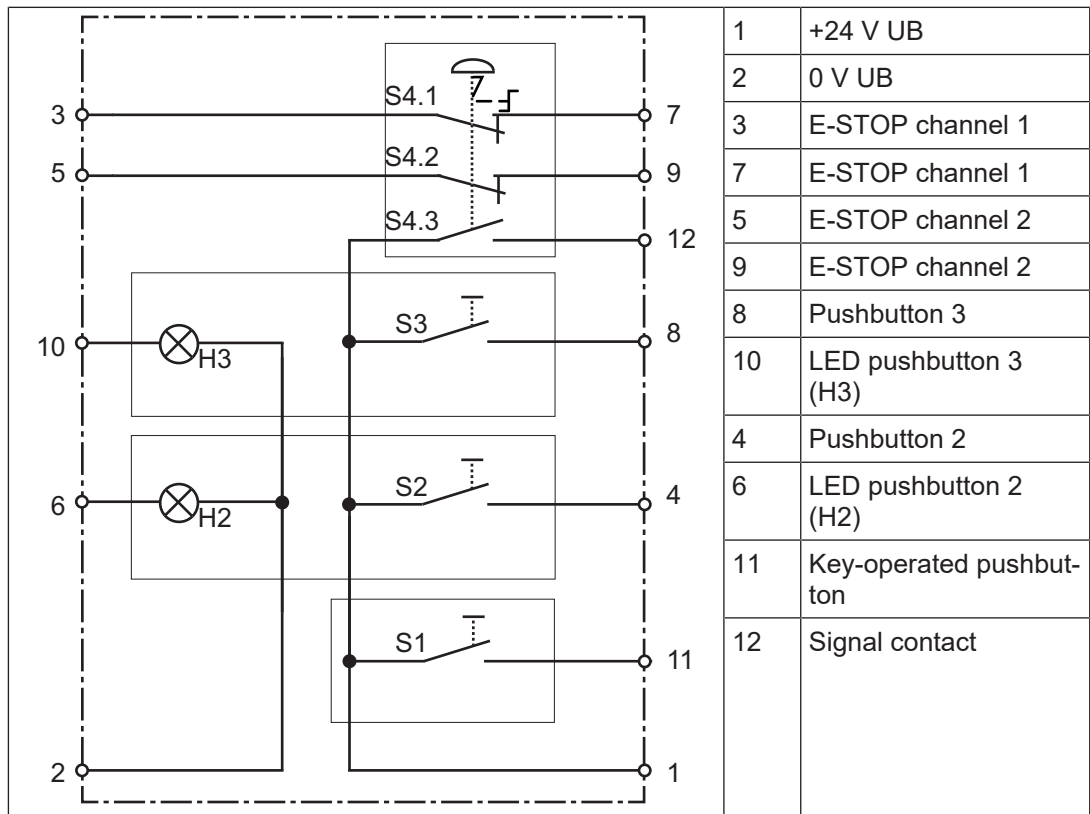
PIT gb LLLP/PIT gb LLLP



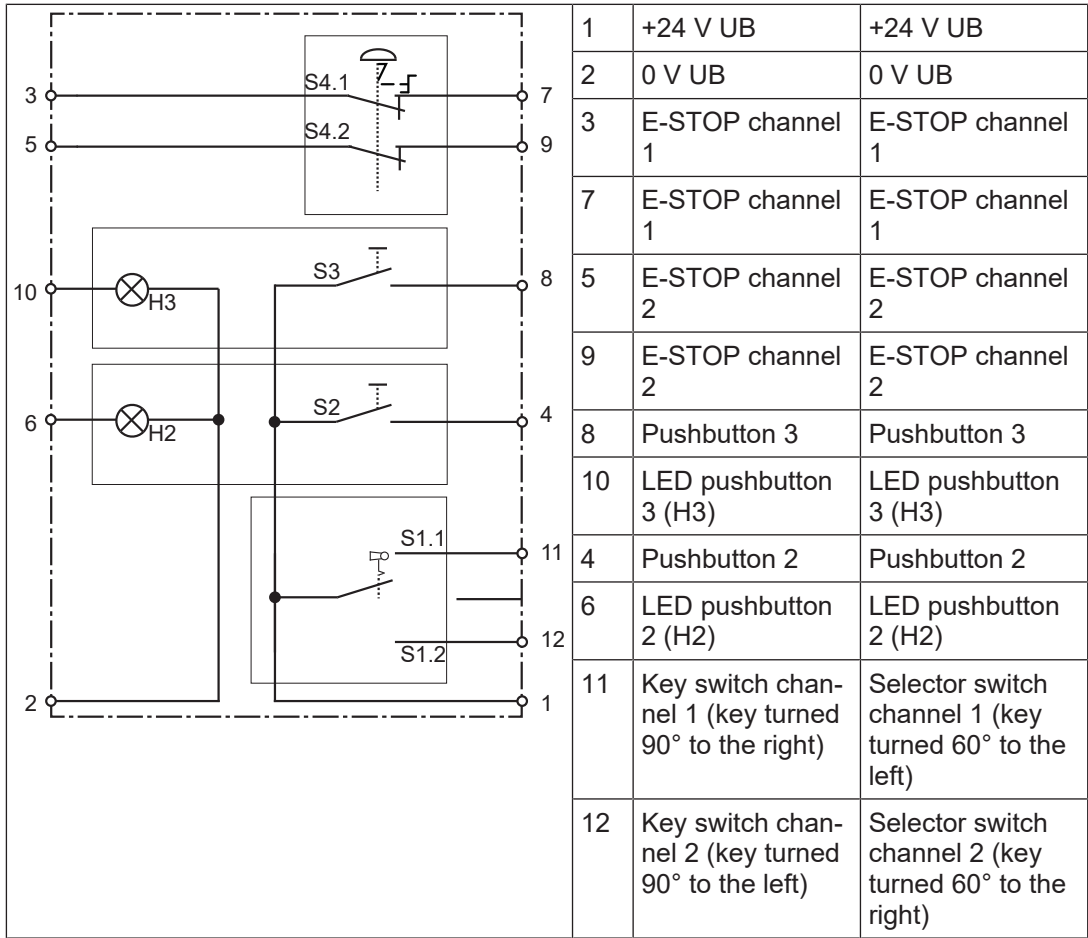
PIT gb CLLE y/PIT gb CLLP y



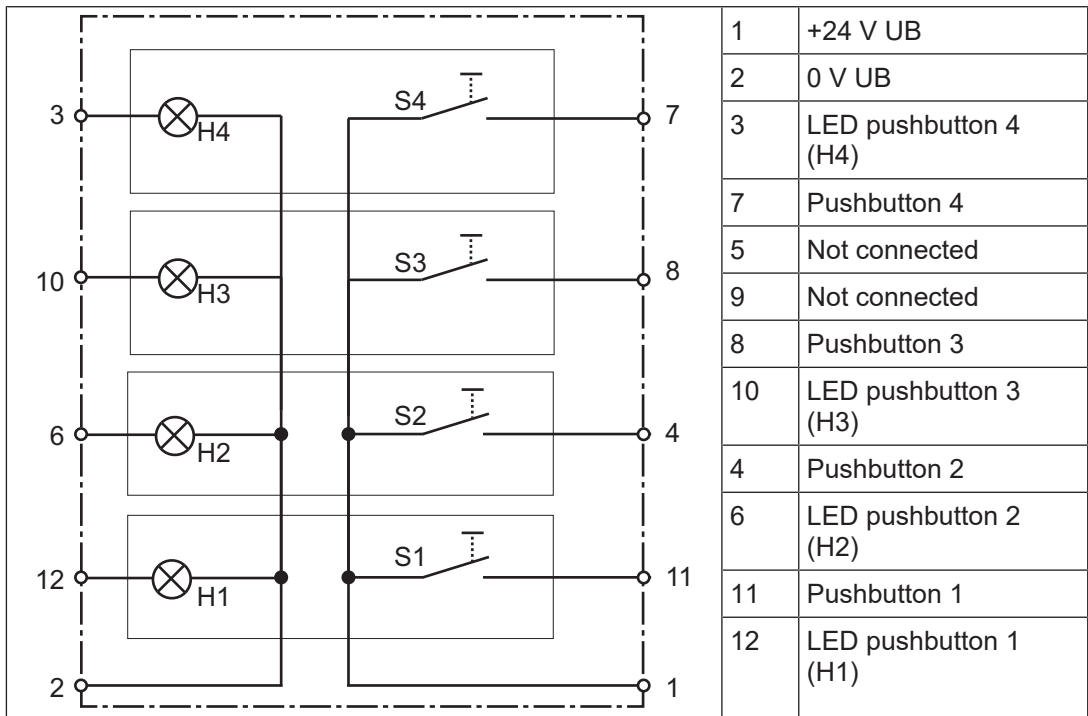
PIT gb BLLE y/PIT gb DLLE y



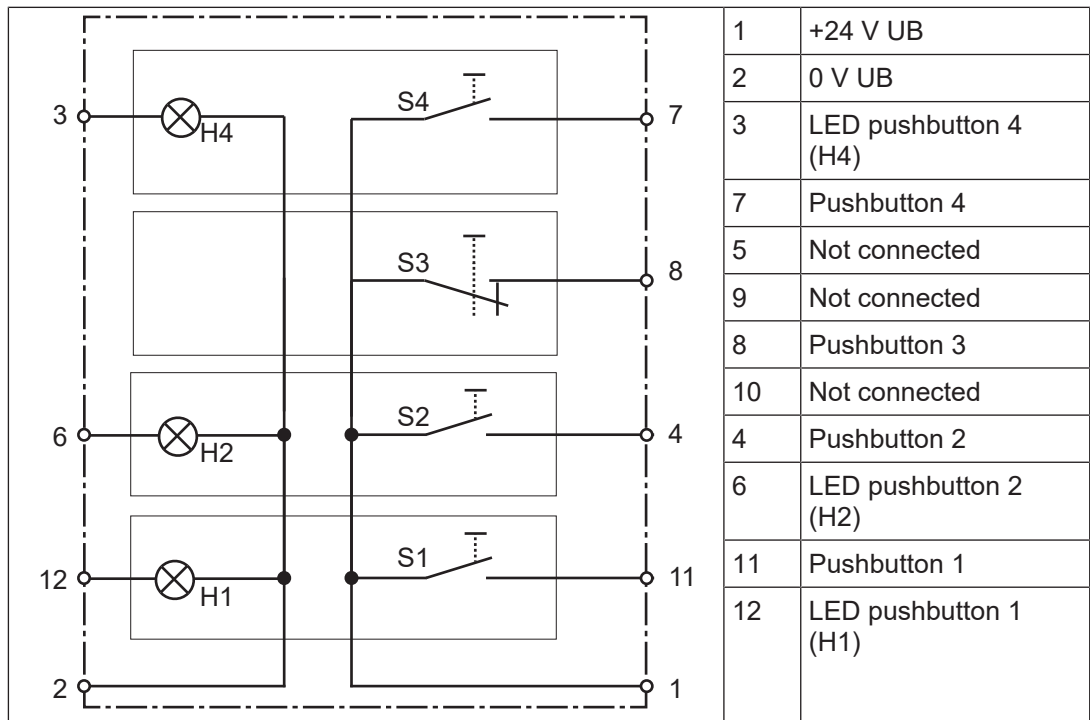
PIT gb KLL/PIT gb WLLE



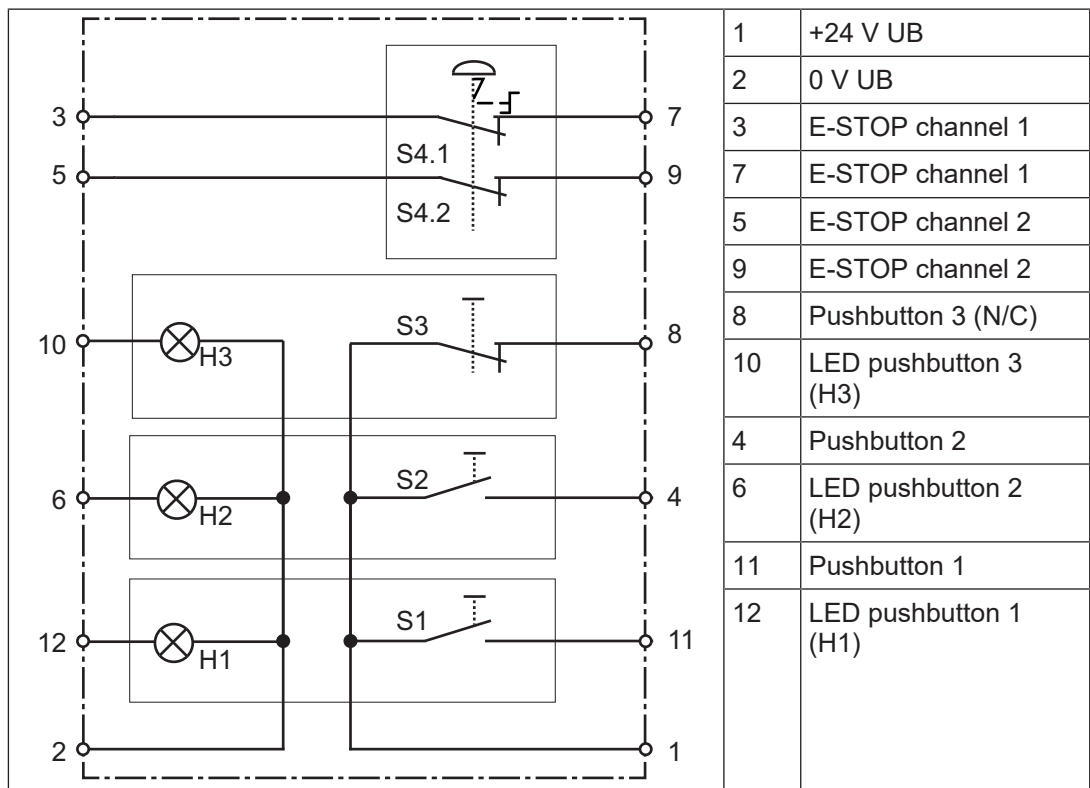
PIT gb LLLL



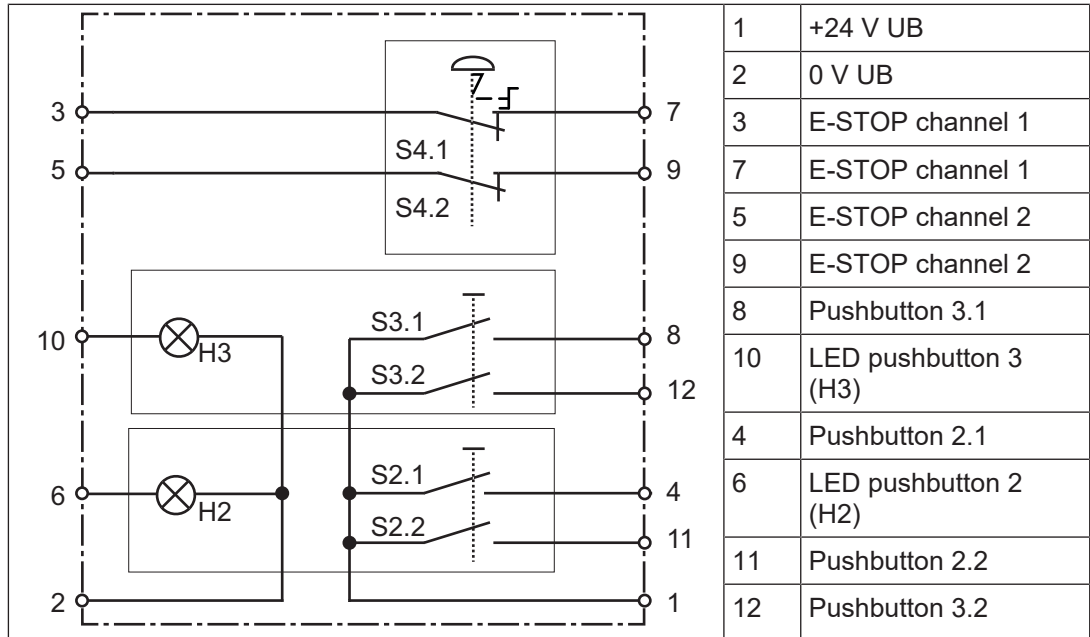
PIT gb LLUL



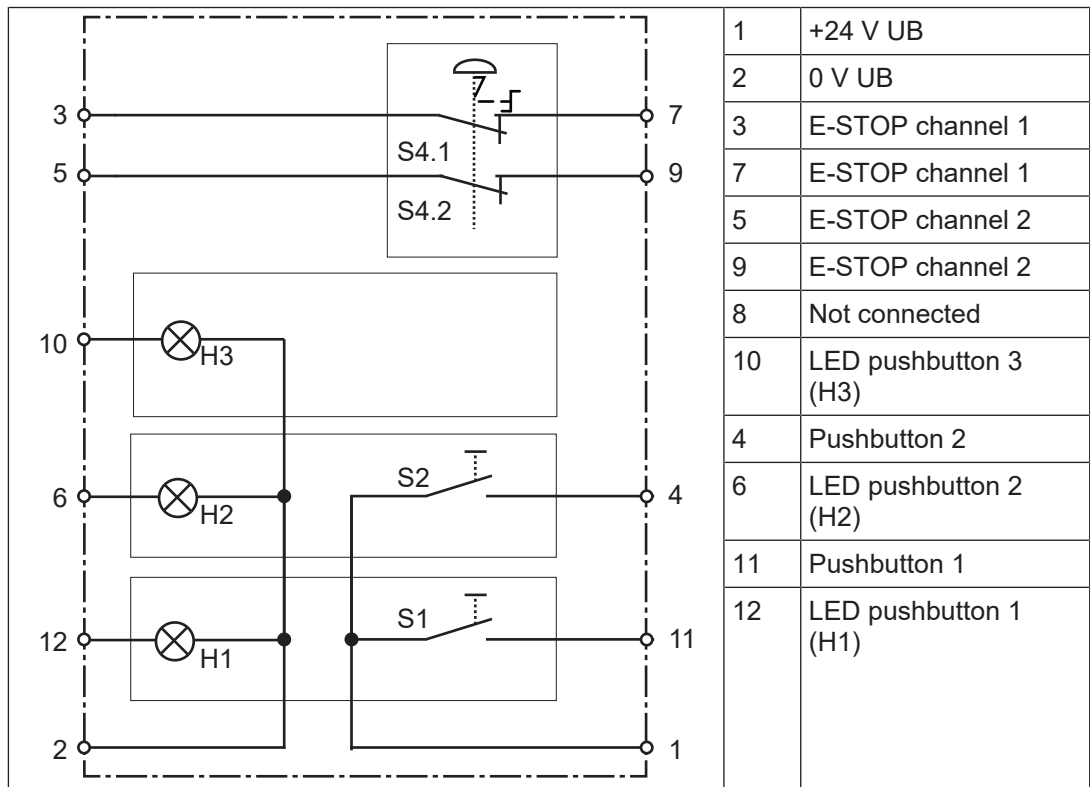
PIT gb LLTE



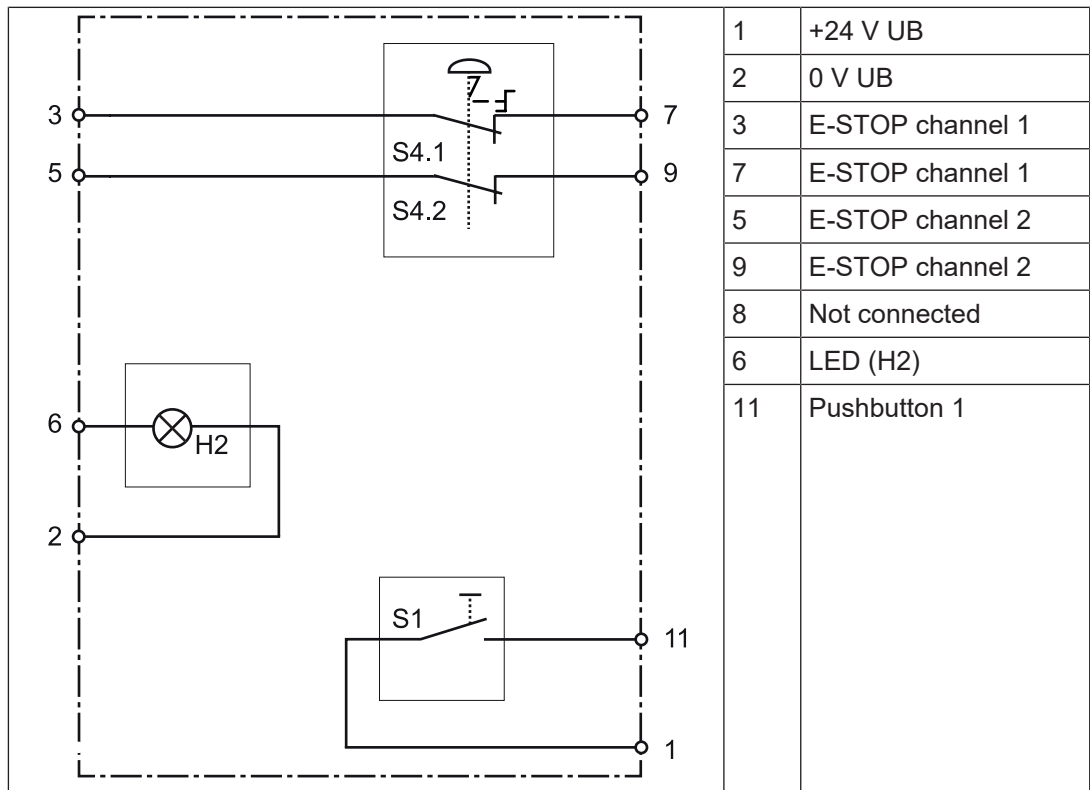
PIT gb CSSE




PIT gb LLME



PIT gb VMCE



5 Wiring

- ▶ The power supply must meet the regulations for extra low voltages with protective electrical separation (SELV, PELV).
- ▶ Ensure the wiring and EMC requirements of EN 60204-1 are met.
- ▶ To connect the PIT gb to the evaluation devices, use a 12-pin cable with an A-coded M12 female connector (see [Order reference: Accessories](#) [ 50]).

Guidelines for UL certification

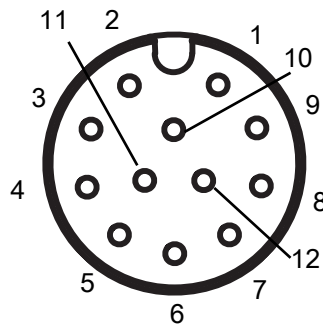
- ▶ Device rated Type 1, or equivalent.
- ▶ Use 75°C copper conductors 16-28 AWG only, or equivalent.
- ▶ Circuit protection shall be supplied by a fuse rated more than 4 A, or equivalent.

5.1 Terminal assignment connectors



NOTICE

The colour marking for the connection lead only applies for the cable that Pilz supplies as an accessory



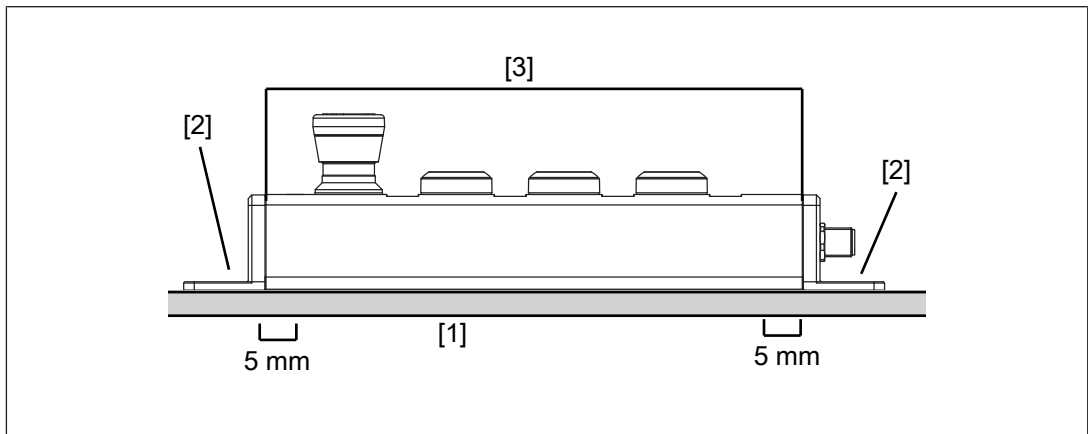
12-pin M12 male connector

PIN	Wire colour
1	Brown
2	Blue
3	White
4	Green
5	Pink
6	Yellow
7	Black
8	Grey
9	Red
10	Purple
11	Grey-pink
12	Red-blue

6 Installation

6.1 Installation of device

- ▶ The mounting surface must have a max. unevenness of 0.5 mm.
- ▶ The housing of the PIT gb must make contact with the mounting surface over at least 5 mm on both ends (see figure).



Legend

- [1] Mounting surface
- [2] Mounting bracket
- [3] Housing

- ▶ To fasten the PIT gb, use M5 screws and the provided washers M5.
- ▶ Torque setting: Please note the information provided under [Technical details](#) [31].

Procedure:

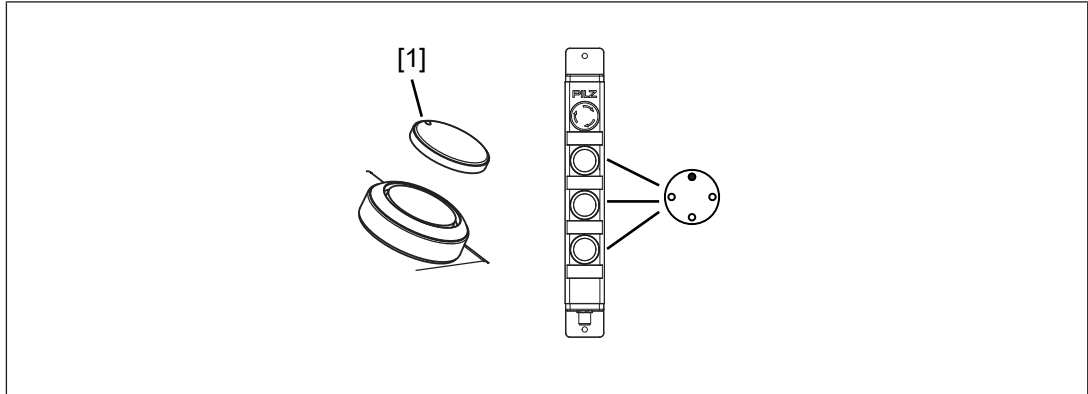
1. Provide the mounting surface with drill holes for fastening the PIT gb (see [Dimensions](#) [30]).
2. Turn the mounting bracket to the correct position for installation.
3. Fasten the PIT gb to the mounting surface and tighten the screws (including washers) with 4 Nm.

6.2 Attach coloured caps

Place the coloured caps (supplied) on the control element.

Ensure that the alignment marking on the coloured cap matches up with one of the positions illustrated.

Press on the coloured cap until you feel it click into position.



Legend

[1] Alignment marking

6.3 Exchange of control elements

Prerequisites

- ▶ The plant that is controlled by the PIT gb is not in operation and cannot be restarted without an equivalent safety device.
- ▶ The new control element has the same design as the defective control element.

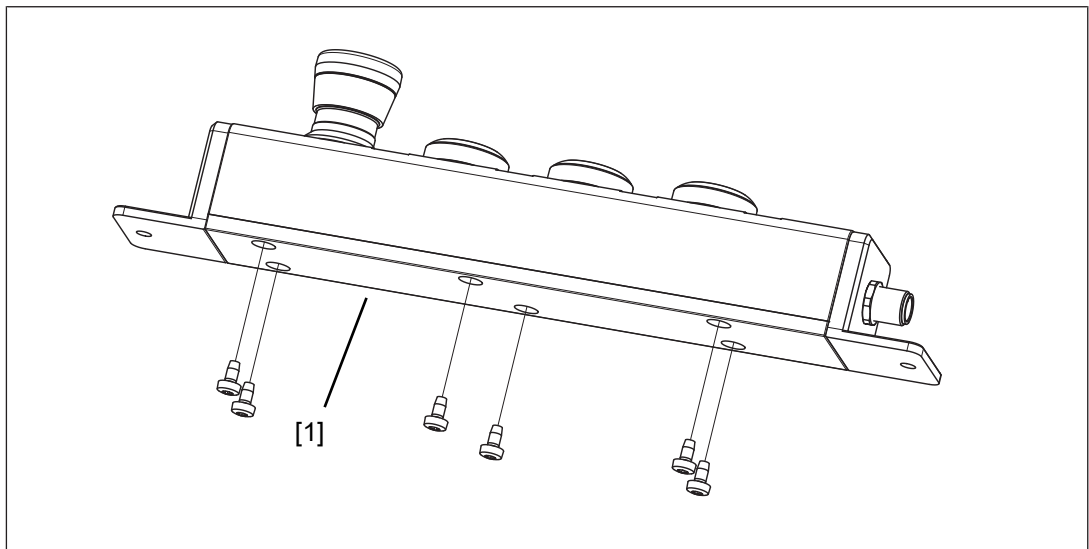
Required tool

- ▶ PIT gb fixing spanner (see [Accessories](#) [ 50]) for threaded ring of the control element
- ▶ Screwdriver for Torx Tx 20

Procedure:

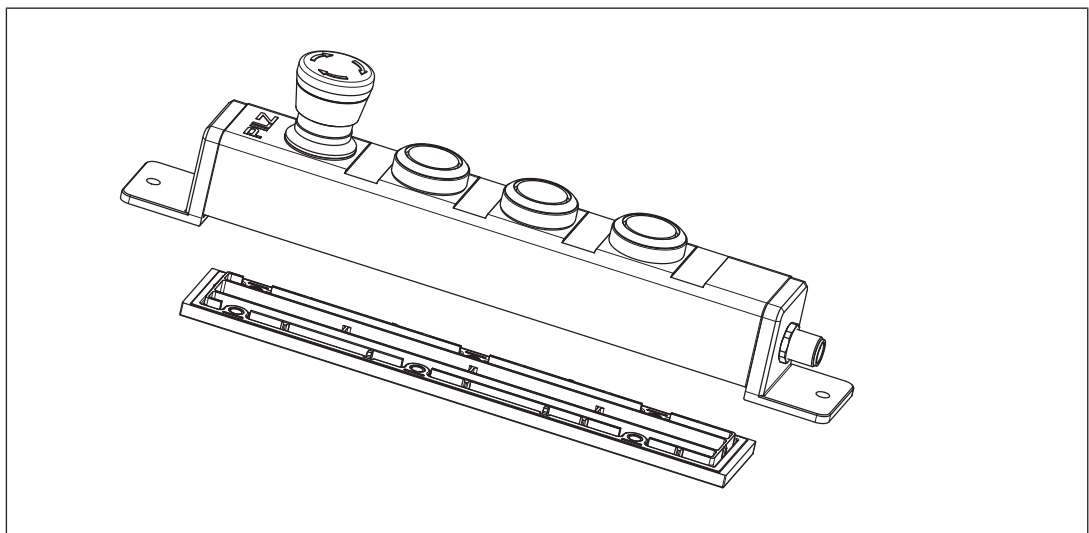
► Torque setting: Please note the information provided under [Technical details](#) [31].

1. Disconnect the connection of the PIT gb to the evaluation device.
2. Loosen the fixing screws of the PIT gb at the mounting surface.
3. Loosen the 6 fixing screws for the terminating plate of the PIT gb and remove the terminating plate.

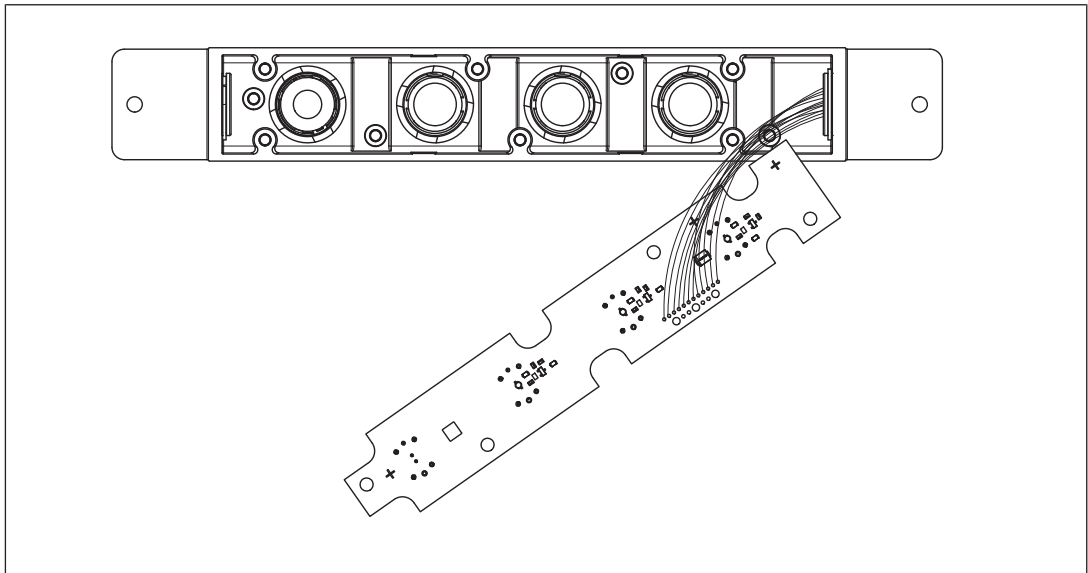
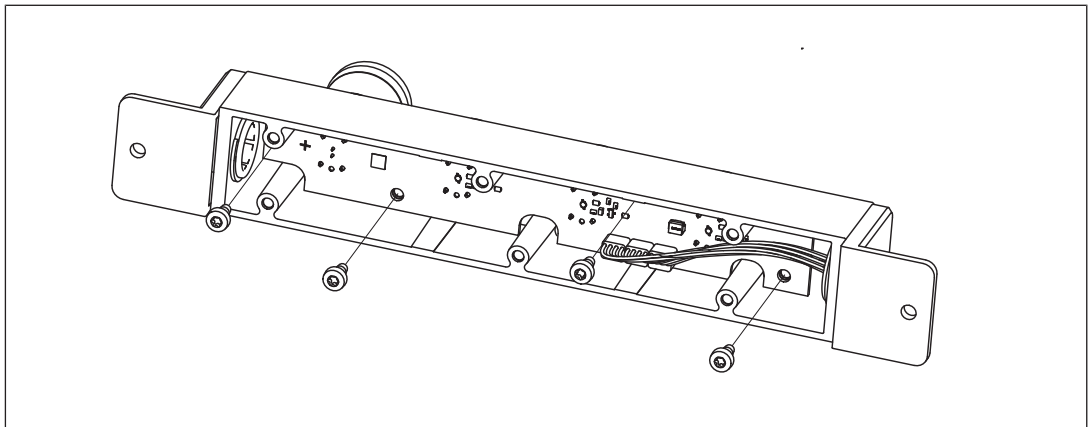


Legend

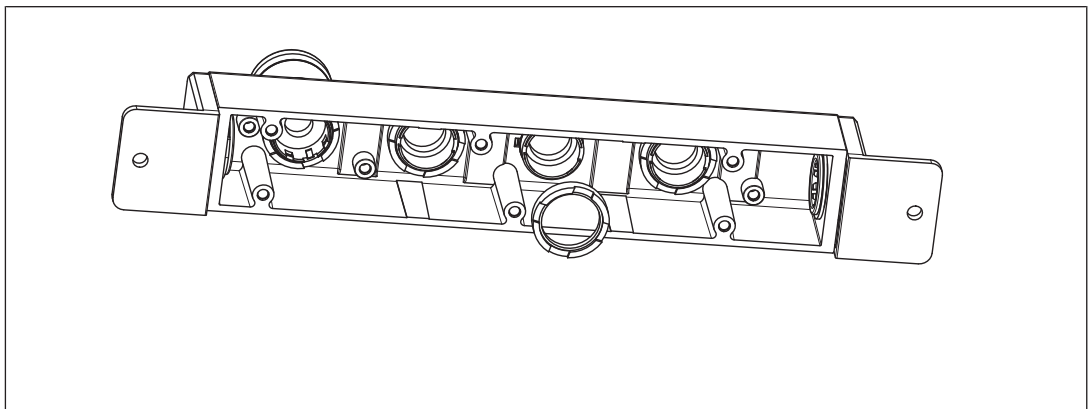
[1] Terminating plate



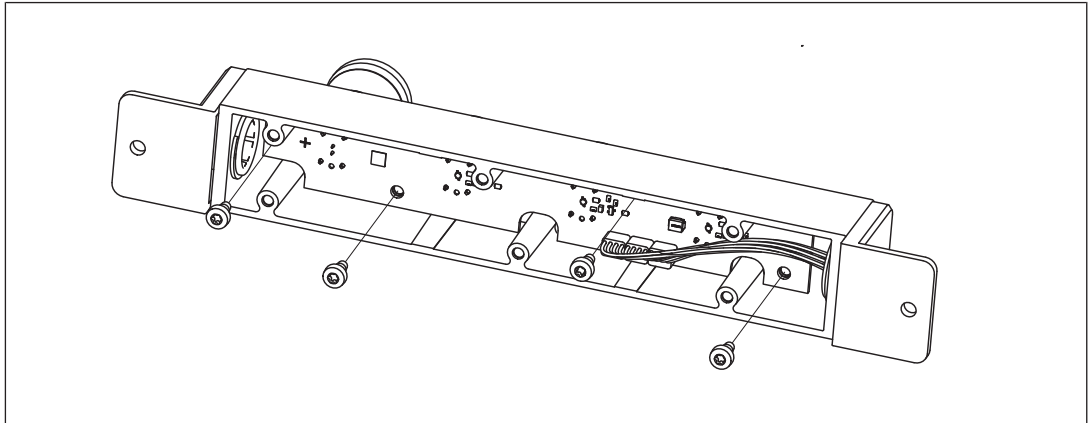
4. Loosen the fixing screws of the printed circuit board and carefully lift off the printed circuit board (see figures).



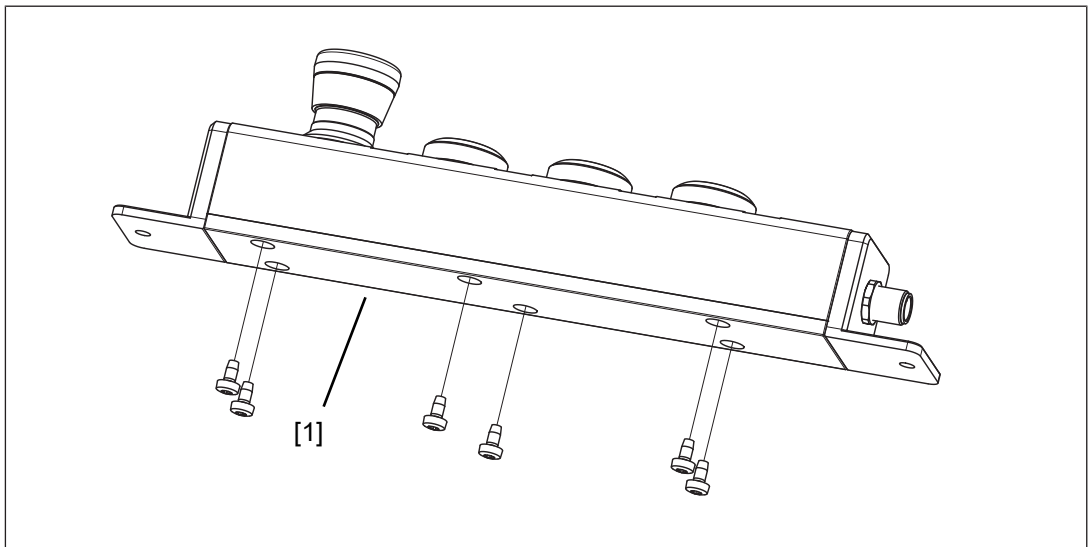
5. Loosen the threaded ring of the control element that is to be exchanged and remove the threaded ring (see figure).



1. Remove the control element on the front of the PIT gb and insert the part of the new control element.
 The control element has a stud on its side to secure it against twisting. The stud must be positioned correctly when inserting the control element.
2. Screw the control element to the threaded ring again using 1,2 Nm (see figure) and apply the printed circuit board again.
 ⇒ Make sure that the strands are not damaged, crushed or twisted here.
3. Screw the printed circuit board to the fixing screws with 1,8 Nm (see figure).



4. Screw the fixing screws for the PIT gb terminating plate in again and tighten the screws with 1,8 Nm.
 ⇒ Make sure that the strands are not damaged, crushed or twisted here.



Legend

[1] Terminating plate

5. Screw the PIT gb onto the mounting surface with the fixing screws with 4 Nm.
6. Connect the PIT gb to the evaluation device.

7. Perform a manual [function test](#)  27] on the unit.

Only commission the plant that is controlled by the unit if the function test was successful.

8. Recommission the plant that is controlled by the PIT gb.

Place the coloured caps (supplied) on the control element.

Ensure that the alignment marking on the coloured cap matches up with one of the positions illustrated.

Press on the coloured cap until you feel it click into position.

7 Commissioning

7.1 Connection to evaluation device

Suitable Pilz evaluation devices for the actuation of the LED and reading out all control elements include:

- ▶ PNOZmulti
- ▶ PSSuniversal PLC

Suitable Pilz evaluation devices for the evaluation of the E-STOP:

- ▶ PNOZelog
- ▶ PNOZsigma
- ▶ PNOZ X

The correct connection to the respective evaluation device is described in the operating manual for the evaluation device. Make sure that the connection is made in accordance with the specifications in the operating manual for the selected evaluation device.

7.2 Function test

Once the unit has been installed and aligned, final inspections must be carried out before it can be put into service.



INFORMATION

This inspection may only be carried out by qualified personnel.

- ▶ Always test the function with a connected evaluation device.
- ▶ Check the function of the E-STOP.
- ▶ Check the function of the other control elements.

8 Troubleshooting

Error	Cause	Description/measure
LED off	0 V voltage supply not present and/or no signal at corresponding input	Check the wiring of the inputs and outputs and rectify wiring errors
No output signal with control element operation	24 V voltage supply not present	Check the wiring of the inputs and outputs and rectify wiring errors
Control element damaged	External force	Exchange defective control element
Function of the unit impaired	Connection cable damaged	Check connection cable and exchange if necessary

9 Checks and maintenance

It is not necessary to perform maintenance work on the product in normal operation. Please return any faulty products to Pilz.

9.1 Checks

Monthly check

- ▶ Perform a manual [function test](#) [ 27] of the PIT gb every month.



INFORMATION

This inspection may only be carried out by qualified personnel.

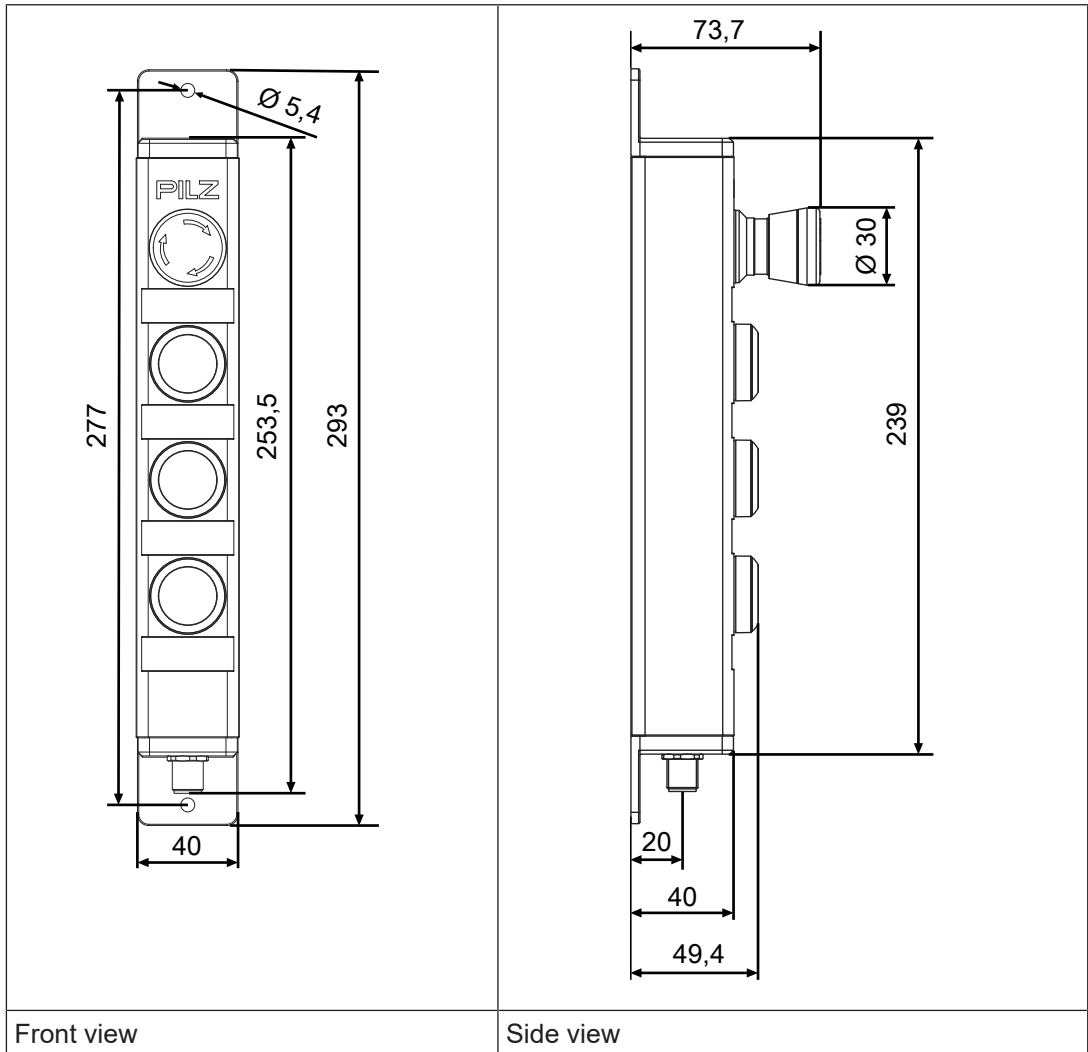
Check after modifications

Check the PIT gb each time the plant/machine is modified. Changing the PIT gb or swapping PIT gb components should also be regarded as a modification.

9.2 Cleaning

Clean the unit every month with a soft cloth and a mild cleaning agent.

10 Dimensions



11 Technical details order no. G1000001-G1000002

General	G1000001	G1000002
Certifications	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL
Self-monitored	No	No
Lamp		
Kind	LED	LED
Colour	white	white
Electrical data	G1000001	G1000002
Supply voltage		
Voltage	24 V	24 V
Kind	DC	DC
Voltage tolerance	-20 %/+20 %	-20 %/+20 %
Output of external power supply (DC)	12 W	12 W
Duty cycle	100 %	100 %
Min. contact current	1 mA	1 mA
E-STOP	G1000001	G1000002
Quantity	1	1
Number of N/C contacts	2	2
Number of signal contacts	–	1
E-STOP release type	Turn release	Turn release
Utilisation category		
In accordance with the standard	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V
Current	0,1 A	0,1 A
Contact material	Ag	Ag
Contact material signal contact	–	Au
Mechanical life	6050 cycles	6050 cycles
Signal output		
Output voltage	–	24 V
Max. current	–	0,1 A
Pushbutton	G1000001	G1000002
Quantity	3	2
Number of N/O contacts	3	2
Utilisation category		
In accordance with the standard	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V
Max. current	0,1 A	0,1 A
Mechanical life	1,000,000 cycles	1,000,000 cycles
B10	1,300,000 cycles	1,300,000 cycles
Contact material	Ag	Ag
Environmental data	G1000001	G1000002
Ambient temperature		
Temperature range	-20 - 60 °C	-20 - 60 °C

Environmental data	G1000001	G1000002
Storage temperature		
Temperature range	-25 - 70 °C	-25 - 70 °C
Climatic suitability		
In accordance with the standard	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C
Vibration		
In accordance with the standard	EN 60947-5-2	EN 60947-5-2
Frequency	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm
Shock stress		
In accordance with the standard	EN 60947-5-2	EN 60947-5-2
Acceleration	30g	30g
Duration	11 ms	11 ms
Airgap creepage		
In accordance with the standard	EN 60947-1	EN 60947-1
Overvoltage category	III	III
Pollution degree	3	3
Protection type		
Housing	IP65	IP65
In accordance with UL	Type 1	Type 1
Mechanical data	G1000001	G1000002
Mounting position	Any	Any
Connection type	M12, 12-pin male connector	M12, 12-pin male connector
Material		
Housing	Zn	Zn
Fixing screws torque settings	4 Nm	4 Nm
Torque setting terminating plate	1,8 Nm	1,8 Nm
Torque setting circuit board	1,8 Nm	1,8 Nm
Torque setting control element	1,2 Nm	1,2 Nm
Dimensions		
Height	293 mm	293 mm
Width	40 mm	40 mm
Depth	40 mm	40 mm
Weight	800 g	800 g

Where standards are undated, the 2017-12 latest editions shall apply.

12 Technical details order no. G1000003-G1000004

General	G1000003	G1000004
Certifications	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL
Self-monitored	No	No
Lamp		
Kind	LED	LED
Colour	white	white
Electrical data	G1000003	G1000004
Supply voltage		
Voltage	24 V	24 V
Kind	DC	DC
Voltage tolerance	-20 %/+20 %	-20 %/+20 %
Output of external power supply (DC)	12 W	12 W
Duty cycle	100 %	100 %
Min. contact current	1 mA	1 mA
E-STOP	G1000003	G1000004
Quantity	1	1
Number of N/C contacts	2	2
Number of signal contacts	1	–
E-STOP release type	Turn release	Turn release
Utilisation category		
In accordance with the standard	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V
Current	0,1 A	0,1 A
Contact material	Ag	Ag
Contact material signal contact	Au	–
Mechanical life	6050 cycles	6050 cycles
Signal output		
Output voltage	24 V	–
Max. current	0,1 A	–
Pushbutton	G1000003	G1000004
Quantity	2	2
Number of N/O contacts	2	2
Utilisation category		
In accordance with the standard	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V
Max. current	0,1 A	0,1 A
Mechanical life	1,000,000 cycles	1,000,000 cycles
B10	1,300,000 cycles	1,300,000 cycles
Contact material	Ag	Ag
Key-operated pushbutton	G1000003	G1000004
Quantity	1	–
Number of N/O contacts	1	–

Key-operated pushbutton	G1000003	G1000004
Utilisation category		
In accordance with the standard	EN 60947-5-1	–
DC13 at	24 V	–
Max. current	0,1 A	–
Mechanical life	30,000 cycles	–
Service life mechanical, key not removed	300,000 cycles	–
B10	40,000 cycles	–
B10 without key removal	400,000 cycles	–
Contact material	Ag	–
Key switch	G1000003	G1000004
Quantity	–	1
Number of N/O contacts	–	2
Utilisation category		
In accordance with the standard	–	EN 60947-5-1
DC13 at	–	24 V
Max. current	–	0,1 A
Mechanical life	–	30,000 cycles
Service life mechanical, key not removed	–	300,000 cycles
B10	–	40,000 cycles
B10 without key removal	–	65,000 cycles
Contact material	–	Ag
Environmental data	G1000003	G1000004
Ambient temperature		
Temperature range	-20 - 60 °C	-20 - 60 °C
Storage temperature		
Temperature range	-25 - 70 °C	-25 - 70 °C
Climatic suitability		
In accordance with the standard	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C
Vibration		
In accordance with the standard	EN 60947-5-2	EN 60947-5-2
Frequency	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm
Shock stress		
In accordance with the standard	EN 60947-5-2	EN 60947-5-2
Acceleration	30g	30g
Duration	11 ms	11 ms
Airgap creepage		
In accordance with the standard	EN 60947-1	EN 60947-1
Overvoltage category	III	III
Pollution degree	3	3

Environmental data	G1000003	G1000004
Protection type		
Housing	IP65	IP65
In accordance with UL	Type 1	Type 1
Mechanical data	G1000003	G1000004
Mounting position	Any	Any
Connection type	M12, 12-pin male connector	M12, 12-pin male connector
Material		
Housing	Zn	Zn
Fixing screws torque settings	4 Nm	4 Nm
Torque setting terminating plate	1,8 Nm	1,8 Nm
Torque setting circuit board	1,8 Nm	1,8 Nm
Torque setting control element	1,2 Nm	1,2 Nm
Dimensions		
Height	293 mm	293 mm
Width	40 mm	40 mm
Depth	40 mm	40 mm
Weight	800 g	800 g

Where standards are undated, the 2017-12 latest editions shall apply.

13 Technical details order no. G1000026-G1000028

General	G1000026	G1000027	G1000028
Certifications	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL
Self-monitored	No	No	No
Lamp			
Kind	LED	LED	LED
Colour	white	white	white
Electrical data	G1000026	G1000027	G1000028
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-20 %/+20 %	-20 %/+20 %	-20 %/+20 %
Output of external power supply (DC)	12 W	12 W	12 W
Duty cycle	100 %	100 %	100 %
Min. contact current	1 mA	1 mA	1 mA
E-STOP	G1000026	G1000027	G1000028
Quantity	–	–	1
Number of N/C contacts	–	–	2
E-STOP release type	–	–	Turn release
Utilisation category			
In accordance with the standard	–	–	EN 60947-5-1
DC13 at	–	–	24 V
Current	–	–	0,1 A
Contact material	–	–	Ag
Mechanical life	–	–	6050 cycles
Pushbutton	G1000026	G1000027	G1000028
Quantity	4	2	2
Number of N/C contacts	–	1	1
Number of N/O contacts	4	3	2
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
B10	1,300,000 cycles	1,300,000 cycles	1,300,000 cycles
Contact material	Ag	Ag	Ag
Pushbutton with blanking plate (red)	G1000026	G1000027	G1000028
Quantity	–	1	–

Pushbutton with blank- ing plate (red)	G1000026	G1000027	G1000028
Utilisation category			
In accordance with the standard	–	EN 60947-5-1	–
DC13 at	–	24 V	–
Max. current	–	0,1 A	–
Mechanical life	–	1,000,000 cycles	–
B10	–	1,300,000 cycles	–
Contact material	–	Ag	–
Environmental data	G1000026	G1000027	G1000028
Ambient temperature			
Temperature range	-20 - 60 °C	-20 - 60 °C	-20 - 60 °C
Storage temperature			
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
Vibration			
In accordance with the standard	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	0,35 mm	0,35 mm	0,35 mm
Shock stress			
In accordance with the standard	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
In accordance with the standard	EN 60947-1	EN 60947-1	EN 60947-1
Overvoltage category	III	III	III
Pollution degree	3	3	3
Protection type			
Housing	IP65	IP65	IP65
In accordance with UL	Type 1	Type 1	Type 1
Mechanical data	G1000026	G1000027	G1000028
Mounting position	Any	Any	Any
Connection type	M12, 12-pin male connector	M12, 12-pin male connector	M12, 12-pin male connector
Material			
Housing	Zn	Zn	Zn
Fixing screws torque settings	4 Nm	4 Nm	4 Nm
Torque setting terminating plate	1,8 Nm	1,8 Nm	1,8 Nm

Mechanical data	G1000026	G1000027	G1000028
Torque setting circuit board	1,8 Nm	1,8 Nm	1,8 Nm
Torque setting control element	1,2 Nm	1,2 Nm	1,2 Nm
Dimensions			
Height	293 mm	293 mm	293 mm
Width	40 mm	40 mm	40 mm
Depth	40 mm	40 mm	40 mm
Weight	800 g	800 g	800 g

Where standards are undated, the 2017-12 latest editions shall apply.

14 Technical details order no. G1000029-G1000031

General	G1000029	G1000030	G1000031
Certifications	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL
Self-monitored	No	No	No
Lamp			
Kind	LED	LED	LED
Colour	white	white	white
Electrical data	G1000029	G1000030	G1000031
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-20 %/+20 %	-20 %/+20 %	-20 %/+20 %
Output of external power supply (DC)	12 W	12 W	12 W
Duty cycle	100 %	100 %	100 %
Min. contact current	1 mA	1 mA	1 mA
E-STOP	G1000029	G1000030	G1000031
Quantity	1	–	–
Number of N/C contacts	2	–	–
E-STOP release type	Turn release	–	–
Utilisation category			
In accordance with the standard	EN 60947-5-1	–	–
DC13 at	24 V	–	–
Current	0,1 A	–	–
Contact material	Ag	–	–
Mechanical life	6050 cycles	–	–
Pushbutton	G1000029	G1000030	G1000031
Quantity	2	3	2
Number of N/O contacts	4	3	2
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
B10	1,300,000 cycles	1,300,000 cycles	1,300,000 cycles
Contact material	Ag	Ag	Ag
Mushroom head push-button	G1000029	G1000030	G1000031
Quantity	–	1	1
Number of N/C contacts	–	2	2
Release type	–	Turn release	Turn release

Mushroom head push-button	G1000029	G1000030	G1000031
Utilisation category			
In accordance with the standard	–	EN 60947-5-1	EN 60947-5-1
DC13 at	–	24 V	24 V
Max. current	–	0,1 A	0,1 A
Mechanical life	–	50,000 cycles	50,000 cycles
Contact material	–	Ag	Ag
Environmental data	G1000029	G1000030	G1000031
Ambient temperature			
Temperature range	-20 - 60 °C	-20 - 60 °C	-20 - 60 °C
Storage temperature			
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
Vibration			
In accordance with the standard	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	0,35 mm	0,35 mm	0,35 mm
Shock stress			
In accordance with the standard	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
In accordance with the standard	EN 60947-1	EN 60947-1	EN 60947-1
Overvoltage category	III	III	III
Pollution degree	3	3	3
Protection type			
Housing	IP65	IP65	IP65
In accordance with UL	Type 1	Type 1	Type 1
Mechanical data	G1000029	G1000030	G1000031
Mounting position	Any	Any	Any
Connection type	M12, 12-pin male connector	M12, 12-pin male connector	M12, 12-pin male connector
Material			
Housing	Zn	Zn	Zn
Fixing screws torque settings	4 Nm	4 Nm	4 Nm
Torque setting terminating plate	1,8 Nm	1,8 Nm	1,8 Nm

Mechanical data	G1000029	G1000030	G1000031
Torque setting circuit board	1,8 Nm	1,8 Nm	1,8 Nm
Torque setting control element	1,2 Nm	1,2 Nm	1,2 Nm
Dimensions			
Height	293 mm	293 mm	293 mm
Width	40 mm	40 mm	40 mm
Depth	40 mm	40 mm	40 mm
Weight	800 g	800 g	800 g

Where standards are undated, the 2017-12 latest editions shall apply.

15 Technical details order no. G1000032-G1000034

General	G1000032	G1000033	G1000034
Certifications	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL	CE, EAC, UKCA, UL/cUL
Self-monitored	No	No	No
Lamp			
Kind	LED	LED	LED
Colour	white	white	white
Electrical data	G1000032	G1000033	G1000034
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-20 %/+20 %	-20 %/+20 %	-20 %/+20 %
Output of external power supply (DC)	12 W	12 W	12 W
Duty cycle	100 %	100 %	100 %
Min. contact current	1 mA	1 mA	1 mA
E-STOP	G1000032	G1000033	G1000034
Quantity	1	1	1
Number of N/C contacts	2	2	2
Number of signal contacts	–	1	–
E-STOP release type	Turn release	Turn release	Turn release
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V	24 V
Current	0,1 A	0,1 A	0,1 A
Contact material	Ag	Ag	Ag
Contact material signal contact	–	Au	–
Mechanical life	6050 cycles	6050 cycles	6050 cycles
Signal output			
Output voltage	–	24 V	–
Max. current	–	0,1 A	–
Pushbutton	G1000032	G1000033	G1000034
Quantity	2	3	2
Number of N/O contacts	2	3	2
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
DC13 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
B10	1,300,000 cycles	1,300,000 cycles	1,300,000 cycles
Contact material	Ag	Ag	Ag

Selector switch	G1000032	G1000033	G1000034
Quantity	1	–	–
Number of N/O contacts	2	–	–
Utilisation category			
In accordance with the standard	EN 60947-5-1	–	–
DC13 at	24 V	–	–
Max. current	0,1 A	–	–
Mechanical life	500,000 cycles	–	–
B10	650,000 cycles	–	–
Contact material	Ag	–	–
Environmental data	G1000032	G1000033	G1000034
Ambient temperature			
Temperature range	-20 - 60 °C	-20 - 60 °C	-20 - 60 °C
Storage temperature			
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
Vibration			
In accordance with the standard	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	0,35 mm	0,35 mm	0,35 mm
Shock stress			
In accordance with the standard	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
In accordance with the standard	EN 60947-1	EN 60947-1	EN 60947-1
Overvoltage category	III	III	III
Pollution degree	3	3	3
Protection type			
Housing	IP65	IP65	IP65
In accordance with UL	Type 1	Type 1	Type 1
Mechanical data	G1000032	G1000033	G1000034
Mounting position	Any	Any	Any
Connection type	M12, 12-pin male connector	M12, 12-pin male connector	M12, 12-pin male connector
Material			
Housing	Zn	Zn	Zn
Fixing screws torque settings	4 Nm	4 Nm	4 Nm

Mechanical data	G1000032	G1000033	G1000034
Torque setting terminating plate	1,8 Nm	1,8 Nm	1,8 Nm
Torque setting circuit board	1,8 Nm	1,8 Nm	1,8 Nm
Torque setting control element	1,2 Nm	1,2 Nm	1,2 Nm
Dimensions			
Height	293 mm	293 mm	293 mm
Width	40 mm	40 mm	40 mm
Depth	40 mm	40 mm	40 mm
Weight	800 g	800 g	800 g

Where standards are undated, the 2017-12 latest editions shall apply.

16 Technical details order no. G1000044

General	
Certifications	CE, EAC, UKCA, UL/cUL
Self-monitored	No
Lamp	
Kind	LED
Colour	white
Electrical data	
Supply voltage	
Voltage	24 V
Kind	DC
Voltage tolerance	-20 %/+20 %
Output of external power supply (DC)	12 W
Duty cycle	100 %
Min. contact current	1 mA
E-STOP	
Quantity	1
Number of N/C contacts	2
E-STOP release type	Turn release
Utilisation category	
In accordance with the standard	EN 60947-5-1
DC13 at	24 V
Current	0,1 A
Contact material	Ag
Mechanical life	6050 cycles
Pushbutton	
B10	1,300,000 cycles
Contact material	Ag
Mushroom head pushbutton	
Quantity	1
Utilisation category	
In accordance with the standard	EN 60947-5-1
DC13 at	24 V
Max. current	0,1 A
Mechanical life	1,000,000 cycles
Environmental data	
Ambient temperature	
Temperature range	-20 - 60 °C
Storage temperature	
Temperature range	-25 - 70 °C
Climatic suitability	
In accordance with the standard	EN 60068-2-78
Humidity	93 % r. h. at 40 °C

Environmental data

Vibration

In accordance with the standard	EN 60947-5-2
Frequency	10 - 55 Hz
Amplitude	0,35 mm

Shock stress

In accordance with the standard	EN 60947-5-2
Acceleration	30g
Duration	11 ms

Airgap creepage

In accordance with the standard	EN 60947-1
Overvoltage category	III
Pollution degree	3

Protection type

Housing	IP65
In accordance with UL	Type 1

Mechanical data

Mounting position

Any

Connection type

M12, 12-pin male connector

Material

Housing	Zn
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Fixing screws torque settings

4 Nm

Torque setting terminating plate

1,8 Nm

Torque setting circuit board

1,8 Nm

Torque setting control element

1,2 Nm

Dimensions

Height	293 mm
Width	40 mm
Depth	40 mm

Weight

800 g

Where standards are undated, the 2017-12 latest editions shall apply.

17 Safety characteristic data



NOTICE

You must comply with the safety characteristic data in order to achieve the required safety level for your plant/machine.

Safety characteristic data

B10d in accordance with EN ISO 13849-1:2015 and EN 62061	130.000
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18 Order reference

18.1 Product

Product type	Features		Order no.
PIT gb LLE	Housing with three illuminated push-buttons, one E-STOP and coloured caps	M12, 12-pin male connector	G1000001
PIT gb CLLE y	Housing with blind plug, two illuminated pushbuttons, one E-STOP with signal contact and coloured caps	M12, 12-pin male connector	G1000002
PIT gb BLLE y	Housing with key-operated pushbutton, two illuminated pushbuttons, one E-STOP with signal contact and coloured caps	M12, 12-pin male connector	G1000003
PIT gb KLE	Housing with key switch, two illuminated pushbuttons, one E-STOP and coloured caps	M12, 12-pin male connector	G1000004
PIT gb LLL	Housing with four illuminated push-buttons and coloured caps	M12, 12-pin male connector	G1000026
PIT gb LLUL	Housing with three illuminated push-buttons, one unilluminated pushbutton with protruding blanking plate (red) and coloured caps	M12, 12-pin male connector	G1000027
PIT gb LLTE	Housing with three illuminated push-buttons, one E-STOP and coloured caps	M12, 12-pin male connector	G1000028
PIT gb CSSE	Housing with blind plug, two illuminated pushbuttons, one E-STOP and coloured caps	M12, 12-pin male connector	G1000029
PIT gb LLLP	Housing with three illuminated push-buttons, one E-STOP and coloured caps	M12, 12-pin male connector	G1000030
PIT gb CLLP y	Housing with blind plug, two illuminated pushbuttons, one mushroom head pushbutton with signal contact and coloured caps	M12, 12-pin male connector	G1000031
PIT gb WLE	Housing with selector switch, two illuminated pushbuttons, one E-STOP and coloured caps	M12, 12-pin male connector	G1000032
PIT gb DLLE y	Housing with unilluminated pushbutton, two illuminated pushbuttons, one E-STOP with signal contact and coloured caps	M12, 12-pin male connector	G1000033
PIT gb LLME	Housing with three illuminated push-buttons, one indicator lamp, one E-STOP and coloured caps	M12, 12-pin male connector	G1000034

Product type	Features		Order no.
PIT gb VMCE	Housing with blind plug, one push-button (blue), one indicator lamp, one E-STOP and coloured caps	M12, 12-pin male connector	G1000044

18.2 Spare part

Product type	Features	Order no.
PIT gb es1	E-STOP without signal contact	G1000005
PIT gb es2	E-STOP with signal contact	G1000011
PIT gb push button	Pushbutton, illuminated	G1000006
PIT gb key button	Key-operated pushbutton	G1000007
PIT gb key switch	Key switch with 2 locked positions	G1000008
PIT gb color covers	Colour covers for the illuminated pushbuttons (set)	G1000009
PIT gb blind cover	Blind plug	G1000010
PIT gb push button red	Illuminated pushbutton, protruding blanking plate, round	G1000035
PIT gb push button black	Mushroom head pushbutton, black	G1000036
PIT gb push button black plus 1	Mushroom head pushbutton with signal contact, black	G1000037
PIT gb selector switch	Selector switch, three positions, resting	G1000038
PIT gb signal indicator	Signal indicator with exchangeable blanking plate, white	G1000039
PIT gb spare part key	Spare key for current key-operated pushbutton/key switch	G1000040

18.3 Accessories

Product type	Features	Order no.
PIT gb fixing spanner	Fixing spanner for threaded rings	G1000012
PIT gb color cover wh s1	Colour covers for the illuminated pushbuttons, white, IEC symbol Start	G1000013
PIT gb color cover wh s2	Colour covers for the illuminated pushbuttons, white, IEC symbol ON	G1000014
PIT gb color cover wh s3	Colour covers for the illuminated pushbuttons, white, IEC symbol Unlocking	G1000015
PIT gb color cover wh s4	Colour covers for the illuminated pushbuttons, white, IEC symbol Locking	G1000016
PIT gb color cover bl s5	Colour covers for the illuminated pushbuttons, blue, IEC symbol Request	G1000017
PIT gb color cover bl s6	Colour covers for the illuminated pushbuttons, blue, IEC symbol Reset	G1000018
PIT gb color cover bl s4	Colour covers for the illuminated pushbuttons, blue, IEC symbol Locking	G1000019

Product type	Features	Connector X1	Connector X2	Connector X3	Order no.
PSEN cable M12-12sf 2m	2 m	M12, 12-pin female connector, straight			570350
PSEN cable M12-12sf 3m	3 m	M12, 12-pin female connector, straight			570351
PSEN cable M12-12sf 5m	5 m	M12, 12-pin female connector, straight			570352
PSEN cable M12-12sf 10m	10 m	M12, 12-pin female connector, straight			570353
PSEN cable M12-12sf 20m	20 m	M12, 12-pin female connector, straight			570354
PSEN cable M12-12sf 30m	30 m	M12, 12-pin female connector, straight			570355
PSEN cable M12-12sf 50m	50 m	M12, 12-pin female connector, straight			570356

19 **EC declaration of conformity**

This product/these products meet the requirements of the directive 2006/42/EC for machinery of the European Parliament and of the Council. The complete EC Declaration of Conformity is available on the Internet at www.pilz.com/downloads.

Authorised representative: Norbert Fröhlich, Pilz GmbH & Co. KG, Felix-Wankel-Str. 2, 73760 Ostfildern, Germany

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UKCA-Declaration of Conformity

This product(s) complies with following UK legislation: Supply of Machinery (Safety) Regulation 2008.

The complete UKCA Declaration of Conformity is available on the Internet at www.pilz.com/support/downloads.

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► Support

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We are represented internationally. Please refer to our homepage www.pilz.com for further details or contact our headquarters.

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THE SPIRIT OF SAFETY

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