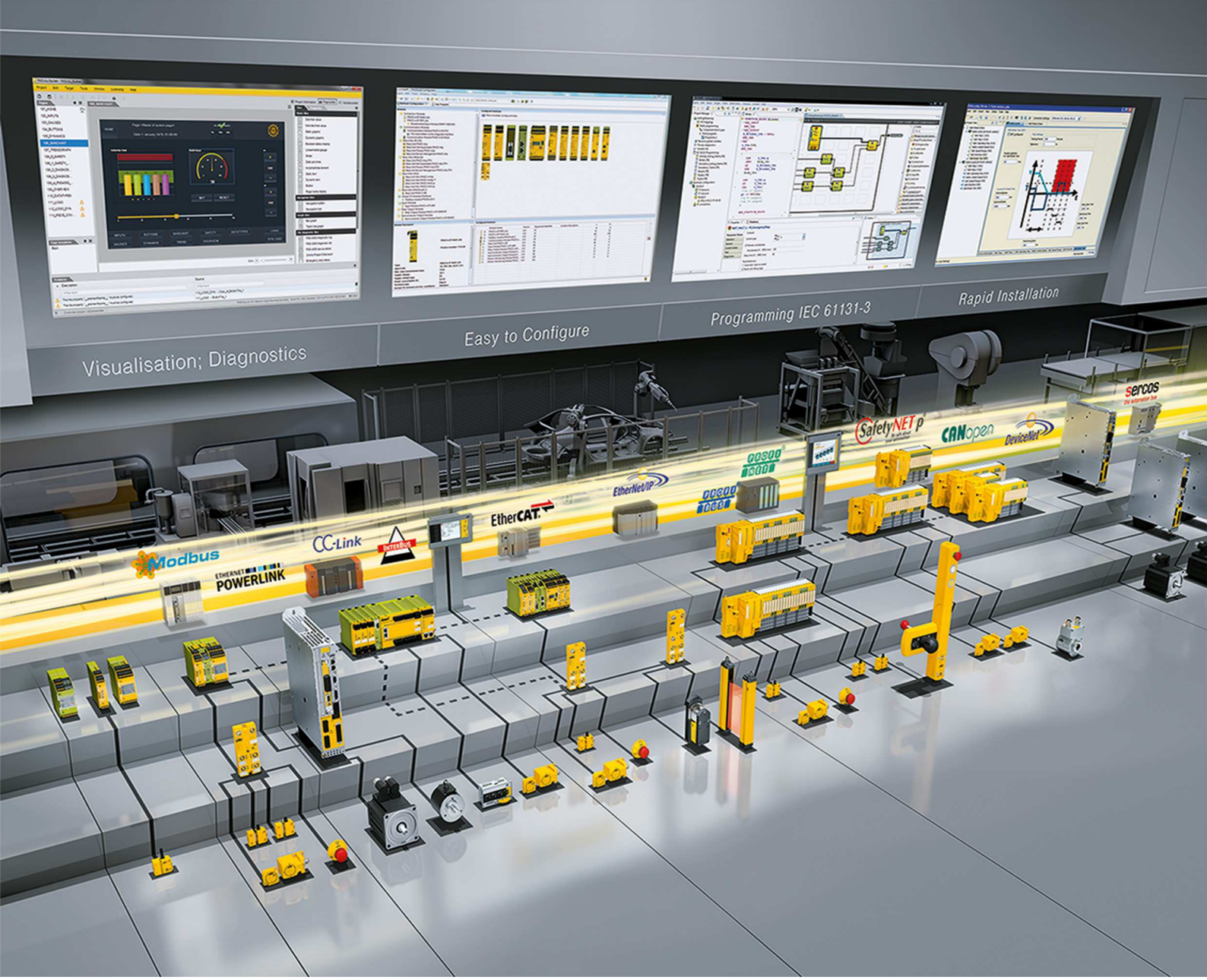


PZW

- Safe monitoring relays

Operating Manual 19157-EN-06

This document is a translation of the original document.

Introduction

Validity of documentation

This documentation is valid for the product PZW. 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.

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.

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.

Safety

Intended use

The unit operates as a pulse relay

- in accordance with EN 292 T2 clause 3.7.10 and 4.1.4 and EN 292 T1 clause 3.23.8, (inching circuit for limit movement of hazardous machine components during installation, set up and positioning)
- in safety circuits in accordance with VDE 0113-1 and IEC 60204-1

The unit is designed for use with

- Safety relays from the PNOZ series
- Two-hand relays from the P2HZ series

The category that can be achieved in accordance with EN ISO 13849-1 depends on the category of the base unit. PZW may not exceed this.

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 Technical details).

NOTICE

EMC-compliant electrical installation

The product is designed for use in an industrial environment. The product may cause interference if installed in other environments. If installed in other environments, measures should be taken to comply with the applicable standards and directives for the respective installation site with regard to interference.

Safety regulations

Safety assessment

Before using a unit it is necessary to perform a safety assessment in accordance with the Machinery Directive.

Functional safety is guaranteed for the product as a single component. However, this does not guarantee the functional safety of the overall plant/machine. In order to achieve the required safety level for the overall plant/machine, define the safety requirements for the plant/machine and then define how these must be implemented from a technical and organisational standpoint.

Use of qualified personnel

The products may only be assembled, installed, programmed, commissioned, operated, maintained and decommissioned by competent persons.

A competent person is someone who, because of their training, experience and current professional activity, has the specialist knowledge required to test, assess and operate the work equipment, devices, systems, plant and machinery in accordance with the general standards and guidelines for safety technology.

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 this description under "Safety"
- And have a good knowledge of the generic and specialist standards applicable to the specific application.

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.).

Disposal

- In safety-related applications, please comply with the mission time T_M in the safety-related characteristic data.
- When decommissioning, please comply with local regulations regarding the disposal of electronic devices (e.g. Electrical and Electronic Equipment Act).

For your safety

The unit meets all the necessary conditions for safe operation. However, please note the following:

- Note for overvoltage category III: If voltages higher than low voltage (>50 VAC or >120 VDC) are present on the unit, connected control elements and sensors must have a rated insulation voltage of at least 250 V.

Unit features

- Positive-guided relay outputs:
  - 1 safety contact (N/O), pulsing
  - 2 auxiliary contacts (N/C), pulsing
- LED display for:
  - Supply voltage
  - Switch state safety output
- 12 pulse times, set via rotary switch
- Feedback loop for monitoring external contactors
- See order reference for unit types

Safety features

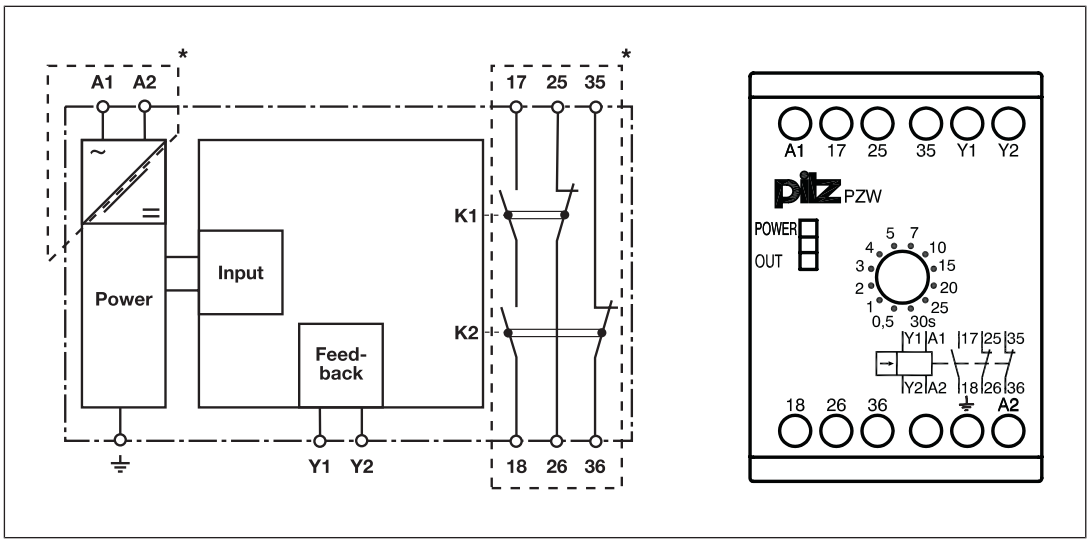
The relay meets the following safety requirements:

- The circuit is internally redundant with built-in self-monitoring.
- The safety function remains effective in the case of a component failure.
- The correct opening and closing of the safety function relays is tested automatically in each on-off cycle.

Block diagram/terminal configuration

Types: AC

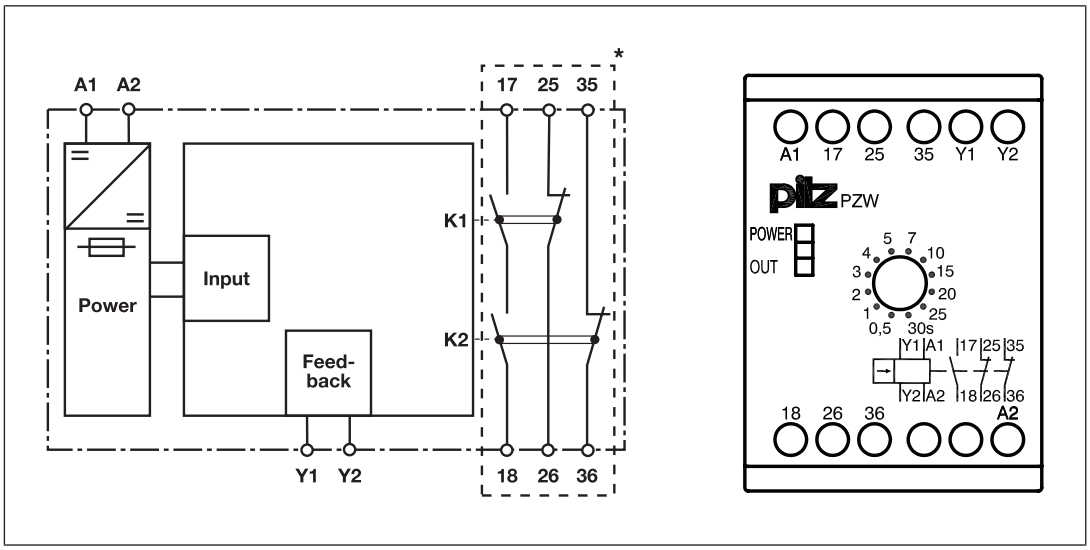
- U_B: 110 - 120 VAC; Order no. 774015, 774044
- U_B: 230 V AC; Order no. 774017, 774048



*Insulation between the non-marked area and the relay contacts: Basic insulation (overvoltage category III), Protective separation (overvoltage category II)

Types: DC

- U_B: 24 VDC; Order no. 774019, 774042



*Insulation between the non-marked area and the relay contacts: Basic insulation (overvoltage category III), Protective separation (overvoltage category II)

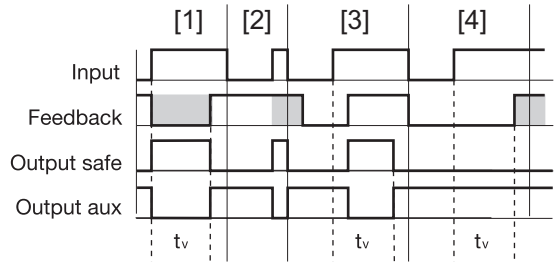
Function description

The unit is ready for operation when the feedback loop Y1-Y2 is closed.

- Input circuit closed (supply voltage is present)
  "POWER" LED is illuminated. The safety contact 17-18 will be closed immediately and the auxiliary contacts 25-26, 35-36 will open, time sequence starts. The "OUT" LED is lit. The safety contact 17-18 is opened redundantly and the auxiliary contacts 25-26, 35-36 will close once the set pulse time has elapsed. The "OUT" LED is goes out.

The input circuit must be closed for at least as long as the set delay time t_v (pulse time). When the input or feedback loop is interrupted prematurely, the time sequence is cancelled. The safety contact 17-18 will open and the auxiliary contacts 25-26, 35-36 will close. The LEDs "POWER" and "OUT" go out.

The delay time t_v (pulse time) can be set in 12 stages.



Legend

- Input: Input circuit
- Feedback: Feedback loop
- Output safe: Safety contact
- Output aux: Auxiliary contacts
- t_v: Delay time (pulse time)

[1]: Normal operating cycle

[2]: Fault: Input circuit opened too early

[3]: Fault: Feedback loop closed too late within t_v

[4]: Fault: Feedback loop closed too late after t_v elapsed

NOTICE

At the latest the safety contacts open after the set delay time + 50 ms + 15% of the set value, even in the case of a component failure.

Installation

- The unit should be installed in a control cabinet with a protection type of at least IP54.
- Use the notch on the rear of the unit to attach it to a DIN rail.
- Ensure the unit is mounted securely on a vertical DIN rail (35 mm) by using a fixing element (e.g. retaining bracket or an end angle).

Wiring

Please note:

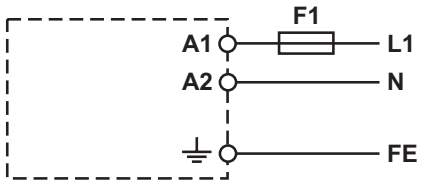
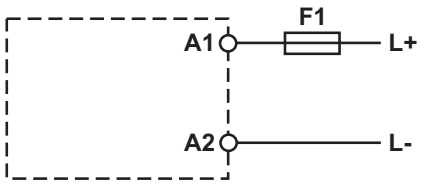
- Information given in the "Technical details" must be followed.
- The output 17-18 is a safety contact, outputs 25-26, 35-36 are auxiliary contacts (e.g. for display).
- Do **not** use auxiliary contacts 25-26, 35-36 for safety circuits!
- To prevent contact welding, a fuse should be connected before the output contacts (see Technical details).
- Do not connect undesignated terminals.
- Calculation of the max. cable runs I_{max} in the input circuit:

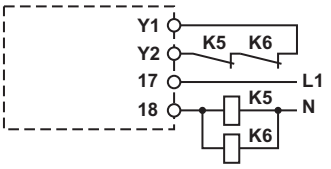
$$I_{max} = \frac{R_{lmax}}{R_l / km}$$

  R_{lmax} = max. overall cable resistance (see Technical details)
  R_l / km = cable resistance/km
- Use copper wire that can withstand 60/75 °C.
- Sufficient fuse protection must be provided on all output contacts with capacitive and inductive loads.
- Do not switch low currents using contacts that have been used previously with high currents.
- Ensure the EMC requirements of IEC 60204-1 are met.
- On 24 VDC devices:
  The power supply must comply with the regulations for extra low voltages with protective electrical separation (SELV, PELV) in accordance with VDE 0100, Part 410.
- In devices for 24 V DC shorts between the input circuit and feedback loop or earth faults in the feedback loop can damage the unit. We recommend the use of a short circuit-proof supply voltage with current limitation.

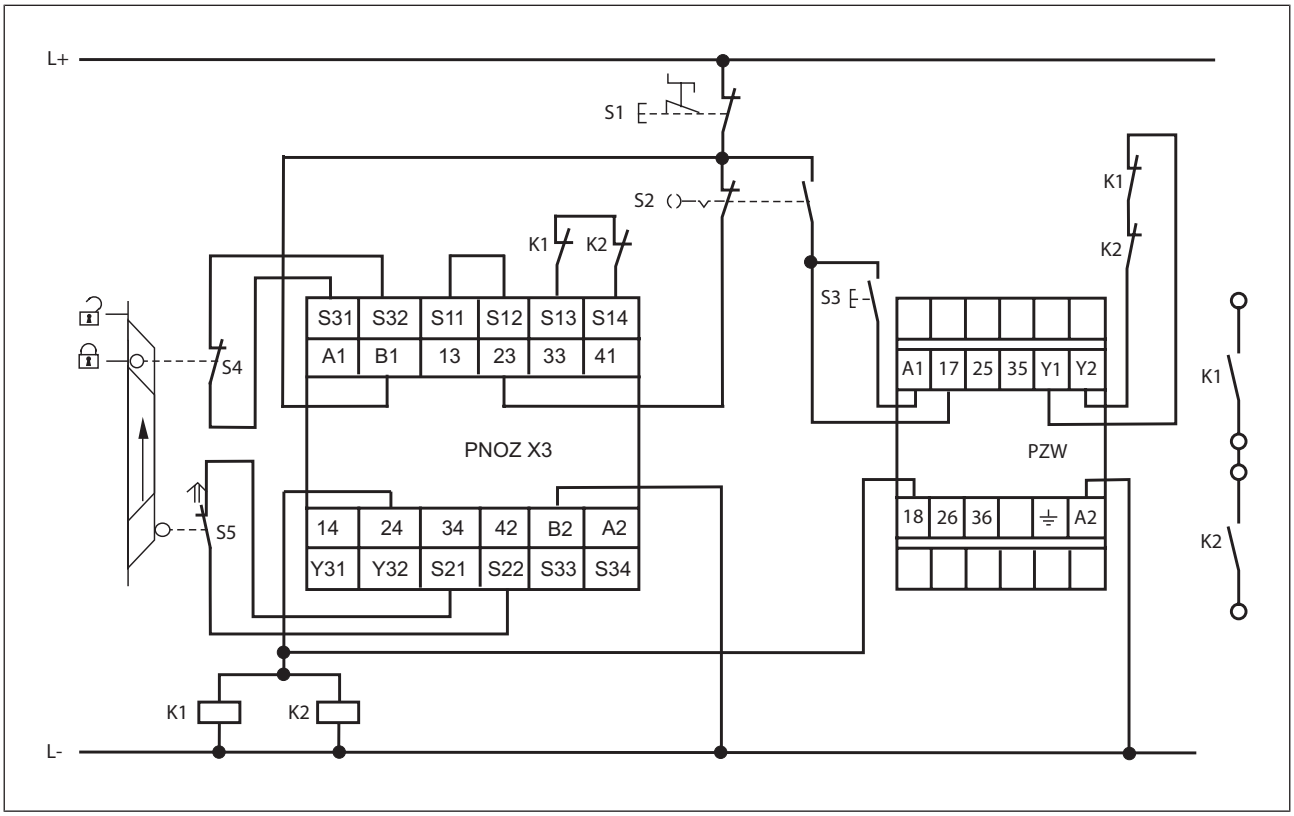
Preparing for Operation

Connection

Supply voltage	AC	DC
Input circuit is driven by connecting U_B		

Feedback loop	Without feedback loop monitoring	With feedback loop monitoring
Link or contacts from external contactors		

Application example



Operation

NOTICE

The safety function should be checked after initial commissioning and each time the plant/machine is changed. The safety functions may only be checked by qualified personnel.

Status indicators

LEDs indicate the status and errors during operation:

LED on

POWER

Supply voltage is present.

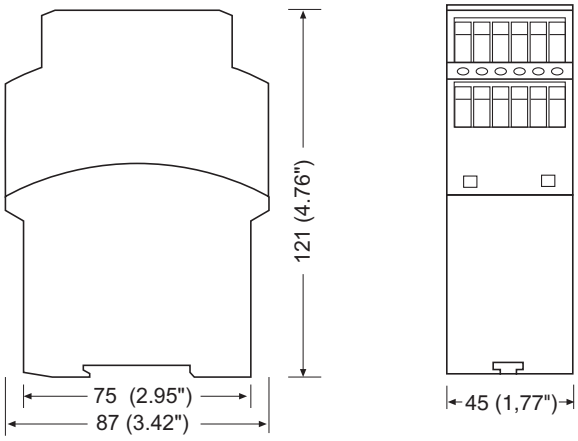
OUT

Safety contact is closed.

Faults – Interference

- LED "POWER" does not light: Short circuit or no supply voltage.
- Contact malfunctions: If the contacts have welded, reactivation will not be possible after the input circuit has opened.

Dimensions in mm



Technical details

Order no. 774015 – 774019

See below for more order numbers

General	**774015**	**774017**	**774019**
Approvals	**CCC, CE, EAC (Eurasian), TÜV, cULus Listed**	**CCC, CE, EAC (Eurasian), TÜV, cULus Listed**	**CCC, CE, EAC (Eurasian), TÜV, cULus Listed**
Electrical data	**774015**	**774017**	**774019**
Supply voltage			
Voltage	**110 - 120 V**	**230 V**	**24 V**
Kind	**AC**	**AC**	**DC**
Voltage tolerance	**-15 %/+10 %**	**-15 %/+10 %**	**-15 %/+10 %**
Output of external power supply (AC)	**4,5 VA**	**4,5 VA**	–
Output of external power supply (DC)	–	–	**3 W**
Frequency range AC	**50 - 60 Hz**	**50 - 60 Hz**	–
Residual ripple DC	–	–	**10 %**
Duty cycle	**100 %**	**100 %**	**100 %**
External unit fuse protection F1 min.	**1 A**	**1 A**	**1 A**
External unit fuse protection F1 max.	**Max. conductor cross section**	**Max. conductor cross section**	**Max. conductor cross section**
Inputs	**774015**	**774017**	**774019**
Voltage at			
Feedback loop DC	**24 V**	**24 V**	**24 V**
Current at			
Feedback loop DC	**50 mA**	**50 mA**	**50 mA**
Relay outputs	**774015**	**774017**	**774019**
Number of output contacts			
Safety contacts (N/O), delayed	**1**	**1**	**1**
Auxiliary contacts (N/C), delayed	**2**	**2**	**2**
Max. short circuit current IK	**1 kA**	**1 kA**	**1 kA**
Utilisation category			
In accordance with the standard	**EN 60947-4-1**	**EN 60947-4-1**	**EN 60947-4-1**

Relay outputs	774015	774017	774019
Utilisation category of safety contacts			
AC1 at	**240 V**	**240 V**	**240 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**1500 VA**	**1500 VA**	**1500 VA**
DC1 at	**24 V**	**24 V**	**24 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**150 W**	**150 W**	**150 W**
Utilisation category of auxiliary contacts			
AC1 at	**240 V**	**240 V**	**240 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**1500 VA**	**1500 VA**	**1500 VA**
DC1 at	**24 V**	**24 V**	**24 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**150 W**	**150 W**	**150 W**
Utilisation category			
In accordance with the standard	**EN 60947-5-1**	**EN 60947-5-1**	**EN 60947-5-1**
Utilisation category of safety contacts			
AC15 at	**230 V**	**230 V**	**230 V**
Max. current	**4 A**	**4 A**	**4 A**
DC13 (6 cycles/min) at	**24 V**	**24 V**	**24 V**
Max. current	**3 A**	**3 A**	**3 A**
Utilisation category of auxiliary contacts			
AC15 at	**230 V**	**230 V**	**230 V**
Max. current	**4 A**	**4 A**	**4 A**
DC13 (6 cycles/min) at	**24 V**	**24 V**	**24 V**
Max. current	**3 A**	**3 A**	**3 A**
Utilisation category in accordance with UL			
Voltage	**240 V AC G. P.**	**240 V AC G. P.**	**240 V AC G. P.**
With current	**6 A**	**6 A**	**6 A**
Voltage	**24 V DC Resistive**	**24 V DC Resistive**	**24 V DC Resistive**
With current	**5 A**	**5 A**	**5 A**
Pilot Duty	**B300, R300**	**B300, R300**	**B300, R300**

Relay outputs	774015	774017	774019
External contact fuse protection, safety contacts			
In accordance with the standard	**EN 60947-5-1**	**EN 60947-5-1**	**EN 60947-5-1**
Max. melting integral	**240 A²s**	**240 A²s**	**240 A²s**
Blow-out fuse, quick	**6 A**	**6 A**	**6 A**
Blow-out fuse, slow	**4 A**	**4 A**	**4 A**
Blow-out fuse, gG	**6 A**	**6 A**	**6 A**
Circuit breaker 24V AC/DC, characteristic B/C	**4 A**	**4 A**	**4 A**
External contact fuse protection, auxiliary contacts			
Max. melting integral	**240 A²s**	**240 A²s**	**240 A²s**
Blow-out fuse, quick	**6 A**	**6 A**	**6 A**
Blow-out fuse, slow	**4 A**	**4 A**	**4 A**
Blow-out fuse, gG	**6 A**	**6 A**	**6 A**
Circuit breaker 24 V AC/DC, characteristic B/C	**4 A**	**4 A**	**4 A**
Conventional thermal current	**6 A**	**6 A**	**6 A**
Contact material	**AgSnO2 + 0,2 µm Au**	**AgSnO2 + 0,2 µm Au**	**AgSnO2 + 0,2 µm Au**
Times	**774015**	**774017**	**774019**
Switch-on delay			
With automatic start after power on typ.	**100 ms**	**100 ms**	**50 ms**
With automatic start after power on max.	**200 ms**	**200 ms**	**100 ms**
Recovery time at max. switching frequency 1/s			
After power failure	**80 ms**	**80 ms**	**80 ms**
Delay time tv	**0,5 s, 1 s, 2 s, 3 s, 4 s, 5 s, 7 s, 10 s, 15 s, 20 s, 25 s, 30 s**	**0,5 s, 1 s, 2 s, 3 s, 4 s, 5 s, 7 s, 10 s, 15 s, 20 s, 25 s, 30 s**	**0,5 s, 1 s, 2 s, 3 s, 4 s, 5 s, 7 s, 10 s, 15 s, 20 s, 25 s, 30 s**
Time accuracy	**-15% / +15% +50 ms**	**-15% / +15% +50 ms**	**-15% / +15% +50 ms**
Repetition accuracy	**2 %**	**2 %**	**2 %**
Max. delay time	**tv + 15 % + 50 ms**	**tv + 15 % + 50 ms**	**tv + 15 % + 50 ms**
Environmental data	**774015**	**774017**	**774019**
Climatic suitability	**EN 60068-2-78**	**EN 60068-2-78**	**EN 60068-2-78**
Ambient temperature			
Temperature range	**-10 - 55 °C**	**-10 - 55 °C**	**-10 - 55 °C**
Storage temperature			
Temperature range	**-40 - 85 °C**	**-40 - 85 °C**	**-40 - 85 °C**
Climatic suitability			
Humidity	**93 % r. h. at 40 °C**	**93 % r. h. at 40 °C**	**93 % r. h. at 40 °C**
Condensation during operation	**Not permitted**	**Not permitted**	**Not permitted**

Environmental data	774015	774017	774019
EMC	**EN 60947-5-1, EN 61000-6-2, EN 61326-3-1**	**EN 60947-5-1, EN 61000-6-2, EN 61326-3-1**	**EN 60947-5-1, EN 61000-6-2, EN 61326-3-1**
Vibration			
In accordance with the standard	**EN 60068-2-6**	**EN 60068-2-6**	**EN 60068-2-6**
Frequency	**10 - 55 Hz**	**10 - 55 Hz**	**10 - 55 Hz**
Amplitude	**0,35 mm**	**0,35 mm**	**0,35 mm**
Airgap creepage			
In accordance with the standard	**EN 60947-1**	**EN 60947-1**	**EN 60947-1**
Overvoltage category	**III / II**	**III / II**	**III / II**
Pollution degree	**2**	**2**	**2**
Rated insulation voltage	**250 V**	**250 V**	**250 V**
Rated impulse withstand voltage	**4 kV**	**4 kV**	**4 kV**
Protection type			
Mounting area (e.g. control cabinet)	**IP54**	**IP54**	**IP54**
Housing	**IP40**	**IP40**	**IP40**
Terminals	**IP20**	**IP20**	**IP20**
Mechanical data	**774015**	**774017**	**774019**
Mounting position	**Any**	**Any**	**Any**
Mechanical life	**10,000,000 cycles**	**10,000,000 cycles**	**10,000,000 cycles**
Material			
Bottom	**PPO UL 94 V0**	**PPO UL 94 V0**	**PPO UL 94 V0**
Front	**ABS UL 94 V0**	**ABS UL 94 V0**	**ABS UL 94 V0**
Top	**PPO UL 94 V0**	**PPO UL 94 V0**	**PPO UL 94 V0**
Connection type	**Screw terminal**	**Screw terminal**	**Screw terminal**
Mounting type	**Fixed**	**Fixed**	**Fixed**
Conductor cross section with screw terminals			
1 core flexible	**0,2 - 4 mm², 24 - 10 AWG**	**0,2 - 4 mm², 24 - 10 AWG**	**0,2 - 4 mm², 24 - 10 AWG**
2 core with the same cross section, flexible with crimp connectors, no plastic sleeve	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**
2 core with the same cross section, flexible without crimp connectors or with TWIN crimp connectors	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**
Torque setting with screw terminals	**0,6 Nm**	**0,6 Nm**	**0,6 Nm**
Dimensions			
Height	**87 mm**	**87 mm**	**87 mm**
Width	**45 mm**	**45 mm**	**45 mm**
Depth	**121 mm**	**121 mm**	**121 mm**
Weight	**350 g**	**350 g**	**255 g**

Order no. 774042 – 774048

General	**774042**	**774044**	**774048**
Approvals	**CCC, CE, EAC (Eurasian), TÜV, cULus Listed**	**CCC, CE, EAC (Eurasian), TÜV, cULus Listed**	**CCC, CE, EAC (Eurasian), TÜV, cULus Listed**
Electrical data	**774042**	**774044**	**774048**
Supply voltage			
Voltage	**24 V**	**110 - 120 V**	**230 V**
Kind	**DC**	**AC**	**AC**
Voltage tolerance	**-15 %/+10 %**	**-15 %/+10 %**	**-15 %/+10 %**
Output of external power supply (AC)	–	**4,5 VA**	**4,5 VA**
Output of external power supply (DC)	**3 W**	–	–
Frequency range AC	–	**50 - 60 Hz**	**50 - 60 Hz**
Residual ripple DC	**10 %**	–	–
Duty cycle	**100 %**	**100 %**	**100 %**
External unit fuse protection F1 min.	**1 A**	**1 A**	**1 A**
External unit fuse protection F1 max.	**Max. conductor cross section**	**Max. conductor cross section**	**Max. conductor cross section**
Inputs	**774042**	**774044**	**774048**
Voltage at			
Feedback loop DC	**24 V**	**24 V**	**24 V**
Current at			
Feedback loop DC	**50 mA**	**50 mA**	**50 mA**
Relay outputs	**774042**	**774044**	**774048**
Number of output contacts			
Safety contacts (N/O), delayed	**1**	**1**	**1**
Auxiliary contacts (N/C), delayed	**2**	**2**	**2**
Max. short circuit current IK	**1 kA**	**1 kA**	**1 kA**
Utilisation category			
In accordance with the standard	**EN 60947-4-1**	**EN 60947-4-1**	**EN 60947-4-1**
Utilisation category of safety contacts			
AC1 at	**240 V**	**240 V**	**240 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**1500 VA**	**1500 VA**	**1500 VA**
DC1 at	**24 V**	**24 V**	**24 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**150 W**	**150 W**	**150 W**

Relay outputs	774042	774044	774048
Utilisation category of auxiliary contacts			
AC1 at	**240 V**	**240 V**	**240 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**1500 VA**	**1500 VA**	**1500 VA**
DC1 at	**24 V**	**24 V**	**24 V**
Min. current	**0,01 A**	**0,01 A**	**0,01 A**
Max. current	**6 A**	**6 A**	**6 A**
Max. power	**150 W**	**150 W**	**150 W**
Utilisation category			
In accordance with the standard	**EN 60947-5-1**	**EN 60947-5-1**	**EN 60947-5-1**
Utilisation category of safety contacts			
AC15 at	**230 V**	**230 V**	**230 V**
Max. current	**4 A**	**4 A**	**4 A**
DC13 (6 cycles/min) at	**24 V**	**24 V**	**24 V**
Max. current	**3 A**	**3 A**	**3 A**
Utilisation category of auxiliary contacts			
AC15 at	**230 V**	**230 V**	**230 V**
Max. current	**4 A**	**4 A**	**4 A**
DC13 (6 cycles/min) at	**24 V**	**24 V**	**24 V**
Max. current	**3 A**	**3 A**	**3 A**
Utilisation category in accordance with UL			
Voltage	**240 V AC G. P.**	**240 V AC G. P.**	**240 V AC G. P.**
With current	**6 A**	**6 A**	**6 A**
Voltage	**24 V DC Resistive**	**24 V DC Resistive**	**24 V DC Resistive**
With current	**5 A**	**5 A**	**5 A**
Pilot Duty	**B300, R300**	**B300, R300**	**B300, R300**
External contact fuse protection, safety contacts			
In accordance with the standard	**EN 60947-5-1**	**EN 60947-5-1**	**EN 60947-5-1**
Max. melting integral	**240 A²s**	**240 A²s**	**240 A²s**
Blow-out fuse, quick	**6 A**	**6 A**	**6 A**
Blow-out fuse, slow	**4 A**	**4 A**	**4 A**
Blow-out fuse, gG	**6 A**	**6 A**	**6 A**
Circuit breaker 24V AC/DC, characteristic B/C	**4 A**	**4 A**	**4 A**

Relay outputs	774042	774044	774048
External contact fuse protection, auxiliary contacts			
Max. melting integral	**240 A²s**	**240 A²s**	**240 A²s**
Blow-out fuse, quick	**6 A**	**6 A**	**6 A**
Blow-out fuse, slow	**4 A**	**4 A**	**4 A**
Blow-out fuse, gG	**6 A**	**6 A**	**6 A**
Circuit breaker 24 V AC/DC, characteristic B/C	**4 A**	**4 A**	**4 A**
Conventional thermal current	**6 A**	**6 A**	**6 A**
Contact material	**AgSnO2 + 0,2 µm Au**	**AgSnO2 + 0,2 µm Au**	**AgSnO2 + 0,2 µm Au**
Times	**774042**	**774044**	**774048**
Switch-on delay			
With automatic start after power on typ.	**50 ms**	**100 ms**	**100 ms**
With automatic start after power on max.	**100 ms**	**200 ms**	**200 ms**
Recovery time at max. switching frequency 1/s			
After power failure	**80 ms**	**80 ms**	**80 ms**
Delay time tv	**0,05 s, 0,1 s, 0,2 s, 0,3 s, 0,4 s, 0,5 s, 0,7 s, 1 s, 1,5 s, 2 s, 2,5 s, 3 s**	**0,05 s, 0,1 s, 0,2 s, 0,3 s, 0,4 s, 0,5 s, 0,7 s, 1 s, 1,5 s, 2 s, 2,5 s, 3 s**	**0,05 s, 0,1 s, 0,2 s, 0,3 s, 0,4 s, 0,5 s, 0,7 s, 1 s, 1,5 s, 2 s, 2,5 s, 3 s**
Time accuracy	**-15% / +15% +50 ms**	**-15% / +15% +50 ms**	**-15% / +15% +50 ms**
Repetition accuracy	**2 %**	**2 %**	**2 %**
Max. delay time	**tv + 15 % + 50 ms**	**tv + 15 % + 50 ms**	**tv + 15 % + 50 ms**
Environmental data	**774042**	**774044**	**774048**
Climatic suitability	**EN 60068-2-78**	**EN 60068-2-78**	**EN 60068-2-78**
Ambient temperature			
Temperature range	**-10 - 55 °C**	**-10 - 55 °C**	**-10 - 55 °C**
Storage temperature			
Temperature range	**-40 - 85 °C**	**-40 - 85 °C**	**-40 - 85 °C**
Climatic suitability			
Humidity	**93 % r. h. at 40 °C**	**93 % r. h. at 40 °C**	**93 % r. h. at 40 °C**
Condensation during operation	**Not permitted**	**Not permitted**	**Not permitted**
EMC	**EN 60947-5-1, EN 61000-6-2, EN 61326-3-1**	**EN 60947-5-1, EN 61000-6-2, EN 61326-3-1**	**EN 60947-5-1, EN 61000-6-2, EN 61326-3-1**
Vibration			
In accordance with the standard	**EN 60068-2-6**	**EN 60068-2-6**	**EN 60068-2-6**
Frequency	**10 - 55 Hz**	**10 - 55 Hz**	**10 - 55 Hz**
Amplitude	**0,35 mm**	**0,35 mm**	**0,35 mm**

Environmental data	774042	774044	774048
Airgap creepage			
In accordance with the standard	**EN 60947-1**	**EN 60947-1**	**EN 60947-1**
Overvoltage category	**III / II**	**III / II**	**III / II**
Pollution degree	**2**	**2**	**2**
Rated insulation voltage	**250 V**	**250 V**	**250 V**
Rated impulse withstand voltage	**4 kV**	**4 kV**	**4 kV**
Protection type			
Mounting area (e.g. control cabinet)	**IP54**	**IP54**	**IP54**
Housing	**IP40**	**IP40**	**IP40**
Terminals	**IP20**	**IP20**	**IP20**
Mechanical data	**774042**	**774044**	**774048**
Mounting position	**Any**	**Any**	**Any**
Mechanical life	**10,000,000 cycles**	**10,000,000 cycles**	**10,000,000 cycles**
Material			
Bottom	**PPO UL 94 V0**	**PPO UL 94 V0**	**PPO UL 94 V0**
Front	**ABS UL 94 V0**	**ABS UL 94 V0**	**ABS UL 94 V0**
Top	**PPO UL 94 V0**	**PPO UL 94 V0**	**PPO UL 94 V0**
Connection type	**Screw terminal**	**Screw terminal**	**Screw terminal**
Mounting type	**Fixed**	**Fixed**	**Fixed**
Conductor cross section with screw terminals			
1 core flexible	**0,2 - 4 mm², 24 - 10 AWG**	**0,2 - 4 mm², 24 - 10 AWG**	**0,2 - 4 mm², 24 - 10 AWG**
2 core with the same cross section, flexible with crimp connectors, no plastic sleeve	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**
2 core with the same cross section, flexible without crimp connectors or with TWIN crimp connectors	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**	**0,2 - 2,5 mm², 24 - 14 AWG**
Torque setting with screw terminals	**0,6 Nm**	**0,6 Nm**	**0,6 Nm**
Dimensions			
Height	**87 mm**	**87 mm**	**87 mm**
Width	**45 mm**	**45 mm**	**45 mm**
Depth	**121 mm**	**121 mm**	**121 mm**
Weight	**255 g**	**350 g**	**350 g**

Where standards are undated, the 2014-07 latest editions shall apply.

Safety characteristic data

NOTICE

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

Operating mode	EN ISO 13849-1: 2008 PL	EN ISO 13849-1: 2008 Category	EN 62061 SIL CL	EN 62061 PFH_D [1/h]	IEC 61511 SIL	IEC 61511 PFD	EN ISO 13849-1: 2008 T_M [year]
Safety contacts, delayed <30 s	**PL d**	**Cat. 3**	**SIL CL 3**	**2,64E-09**	**SIL 3**	**1,26E-05**	**20**
Safety contacts, delayed ≥30 s	**PL c**	**Cat. 1**	**SIL CL 1**	**2,87E-09**	**SIL 2**	**4,64E-05**	**20**

All the units used within a safety function must be considered when calculating the safety characteristic data.

INFORMATION

A safety function's SIL/PL values are **not** identical to the SIL/PL values of the units that are used and may be different. We recommend that you use the PAScal software tool to calculate the safety function's SIL/PL values.

CAUTION!

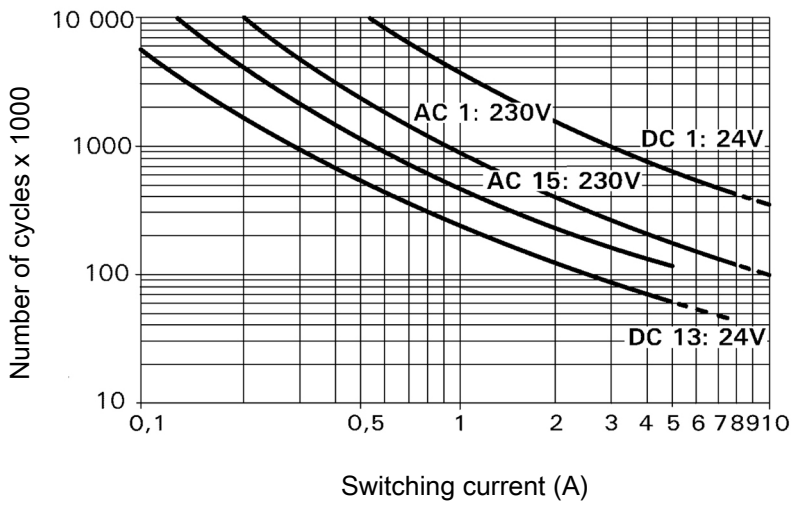
It is essential to consider the relay's service life graphs. The relay outputs' safety-related characteristic data is only valid if the values in the service life graphs are met.

The PFH value depends on the switching frequency and the load on the relay output.
If the service life graphs are not accessible, the stated PFH value can be used irrespective of the switching frequency and the load, as the PFH value already considers the relay's B10d value as well as the failure rates of the other components.

Supplementary data

Service life graph

The service life graphs indicate the number of cycles from which failures due to wear must be expected. The wear is mainly caused by the electrical load; the mechanical load is negligible.



Example

- Inductive load: 0.2 A
- Utilisation category: AC15
- Contact service life: 4 000 000 cycles

Provided the application to be implemented requires fewer than 4 000 000 cycles, the PFH value (see Technical details) can be used in the calculation.

To increase the service life, sufficient spark suppression must be provided on all output contacts. With capacitive loads, any power surges that occur must be noted. With DC contactors, use flywheel diodes for spark suppression.

Order reference

Product type	Features	Connection type	Order No.
PZW	110 - 120 V AC, 30 s selectable	Screw terminals	774 015
PZW	230 V AC, 30 s selectable	Screw terminals	774 017
PZW	24 V DC, 30 s selectable	Screw terminals	774 019
PZW	24 V DC, 3 s selectable	Screw terminals	774 042
PZW	110 - 120 V AC, 3 s selectable	Screw terminals	774 044
PZW	230 V AC, 3 s selectable	Screw terminals	774 048

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/support/downloads.
Representative: Norbert Fröhlich, Pilz GmbH & Co. KG, Felix-Wankel-Str. 2, 73760 Ostfildern, Germany

Support

Technical support is available from Pilz round the clock.

Americas
Brazil
+55 11 97569-2804
Canada
+1 888-315-PILZ (315-7459)
Mexico
+52 55 5572 1300
USA (toll-free)
+1 877-PILZUSA (745-9872)

Asia
China
+86 21 60880878-216
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Australia
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Europe
Austria
+43 1 7986263-0
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Scandinavia
+45 74436332
Spain
+34 938497433
Switzerland
+41 62 88979-30
The Netherlands
+31 347 320477
Turkey
+90 216 5775552
United Kingdom
+44 1536 462203

You can reach our international hotline on:
+49 711 3409-444
support@pilz.com

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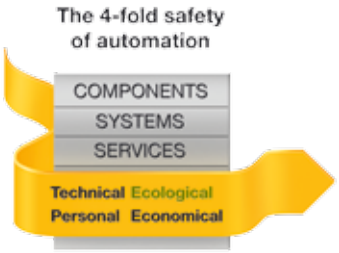

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Partner of:
The Best of German Engineering

Pilz GmbH & Co. KG
Felix-Wankel-Straße 2
73760 Ostfildern, Germany
Tel.: +49 711 3409-0
Fax: +49 711 3409-133
info@pilz.com
www.pilz.com

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