



WSU 26/2 – WEU 26/2 Photoelectric Safety Switch



The information contained in this document may be revised or supplemented without prior notice.



certified by DQS according to
DIN EN ISO 9001 Reg. No. 462-03

Contents

Contents

1 Document Information	5
1.1 About this document	5
1.2 Target group	5
1.3 Scope of information	6
1.4 Symbols used in this document	6
2 Safety	7
2.1 General safety advice and protective measures	7
2.2 Application areas	8
2.3 Intended use of the device	9
2.4 Environmental compatibility	9
3 Product Description	10
3.1 Characteristics	10
3.2 Device functionality	10
4 Mounting	11
4.1 Positioning the sensors	11
4.2 Safety distance	11
4.3 Distance to reflective surfaces	13
4.4 Multiple safeguarding	15
4.4.1 Mutual interference	16
4.5 Mechanical mounting	16
4.5.1 Corner mirrors	18
5 Electrical Installation	19
5.1 Test instructions	20
5.2 Spark suppression	20
5.3 Short-circuit monitoring	21
5.4 Overvoltage protection (fuse)	21
5.5 Wiring diagram	22
5.6 Alignment of WSU and WEU	30
5.6.1 Alignment of WSU and WEU with Alignment Aid AR 60	31
6 Test Instructions	32
6.1 Pre-commissioning tests	32
6.2 Regular testing of the safety device by competent personnel	32
6.3 Daily testing of the safety module by competent personnel	33
7 Maintenance	34
8 Diagnostic Elements	35
9 Technical Data	36
9.1 Overview technical data	36
9.2 Dimensional drawings	38
10 At a glance: Comparison of old versus new devices	42
11 Selection Table	43
11.1 Conversion list	44
12 Accessories Selection Table	45
13 Checklist	46

Abbreviations

PDM	Power-driven machinery (machinery, plant)
WSU	Photoelectric Safety Switch: Sender unit
WEU	Photoelectric Safety Switch: Receiver unit
OSSD	Output Signal Switching Device
AOPD	Active Optoelectronic Protective Device

1 Document Information

1.1 About this document

This document provides instructions for the operation of the WSU/WEU photoelectric safety switch. It contains information on

- Application
- Mounting
- Electrical installation
- Commissioning
- Maintenance
- Ordering

1.2 Target group

The target group of this document is those who install, commission and use the WSU/WEU photoelectric safety switch.

1.3 Scope of information

This technical description contains information on how to install, commission and operate the device. Official and legal regulations must always be observed. It is not possible to provide comprehensive information on all these requirements in this document. In Germany, for example, the Trade Association Directives (ZH 1/597 and ZH 1/281) in particular must be observed.

Further information on health and safety with respect to optoelectronic guarding systems can be obtained directly from your local SICK distributor, e. g. *Safe Machines* (SICK guidelines on the operation of optoelectronic guarding systems).

1.4 Symbols used in this document

Some information in this document is highlighted to ease rapid access to this information:

Note A note provides information on special features of the device.

Explanation An explanation gives basic information.

Recommendation A recommendation assists in deciding upon the best action.



WARNING

Warning!

A warning indicates actual or potential hazards. This is to reduce the risk of accidents.

Always read warning notices carefully and follow them closely.

2 Safety

The devices can only perform their safety function if they are used correctly and integrated into the process in a failsafe manner.

The WSU/WEU photoelectric safety switch meets the requirements of Type 4 Safety Devices as stipulated in EN 61 496-1 and pr EN 50 100-2.

2.1 General safety advice and protective measures

1 National and international regulations apply for the operation of non-contact protection equipment as well as for commissioning and regular maintenance checks, in particular



- Machinery Safety Regulation 98/37 EC
- Provision and Use of Work Equipment Regulations 89/665 EEC
- Relevant safety regulations
- Accident prevention regulations and safety guidelines

It is the responsibility of the manufacturers and operators of the machine on which SICK protection equipment is used to discuss all safety legislation, which may apply, with the responsible authorities and to observe these rules and regulations.

- 2** Furthermore, our notes, in particular the **Test Regulations** (see section 'Tests') in this *Technical Description* or the *Operating Instructions* (such as use, assembly, installation or integration in the machine control unit) must be observed.
- 3** The tests must be performed by **qualified personell** or by specially **authorised and instructed personnel** and must be documented in such a way as to be viewed and understood at any time.
- 4** These *Operating Instructions* shall be given to the **employee** (operator) working with the machine on which SICK guarding systems are installed. The employee **shall be trained** for their job and operation of the equipment **by a competent person**.
- 5** The Test Protocol relating to use of the non-contact safety device is printed at the end of these *Technical Description*. Acceptance testing should be performed on the basis of that protocol.
- 6** Mounting and connection may only be done by qualified personnel. Before commissioning, the mounting and connection must be inspected by the operator's responsible staff member, as is required by the standards and directives of the specific country.

2.2 Application areas

The WSU/WEU 26/2 photoelectric safety switch is used as an access safety system to hazardous areas around machinery or plant. The device is securely mounted in the access area at a pre-determined safe distance from the hazardous point. When the light beam is interrupted the device transmits an emergency stop signal to the machinery or plant.

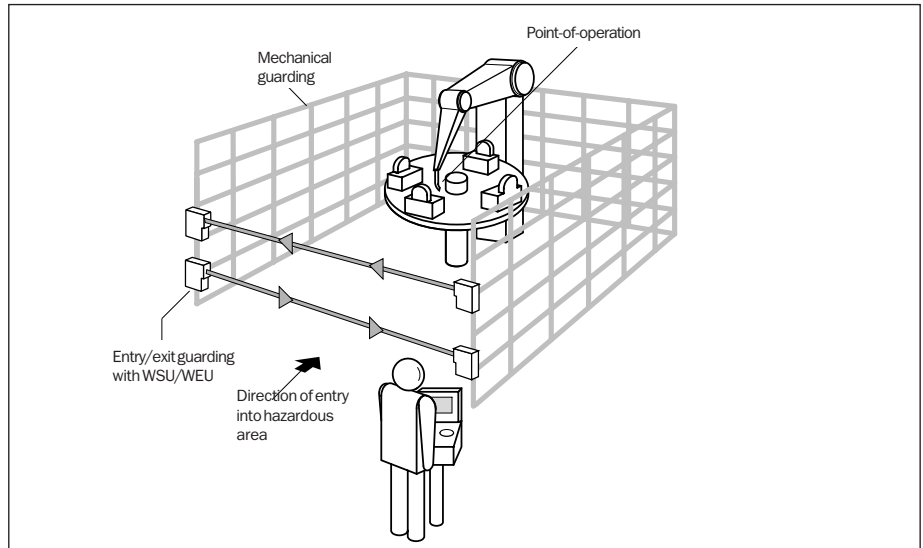


Fig. 1: Entry/exit safeguarding using a WSU/WEU 26/2

The following key points are important for correct operation (Fig. 2):

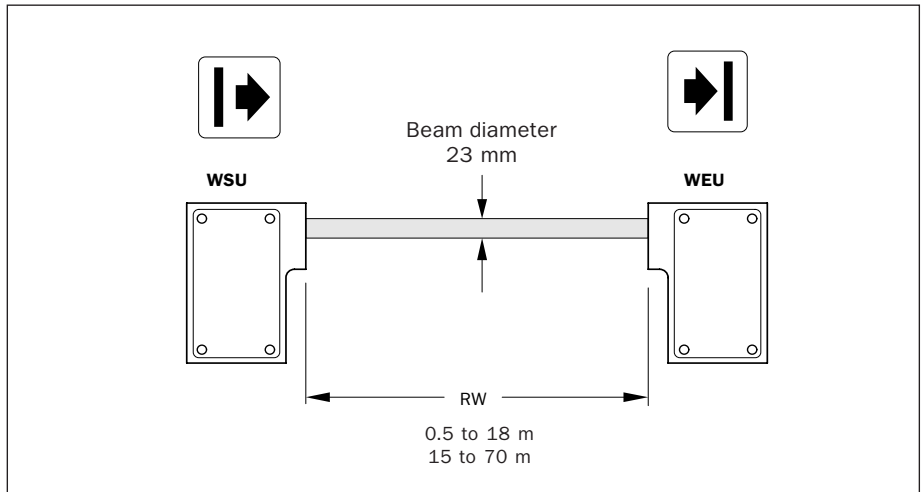


Fig. 2: System construction of the WSU/WEU 26/2

2.3 Intended use of the device

The WSU/WEU photoelectric safety switch may only be used as specified in Section 2.2 *Application areas*. The device may be operated only in accordance with its technical specifications. Any other use or modification – including during mounting and installation – will invalidate any guarantee and any claim against SICK AG.

2.4 Environmental compatibility

The WSU/WEU photoelectric safety switch is designed to have the lowest possible impact on the environment. It neither emits nor contains any environmentally damaging substances, and consumes minimal quantities of energy and resources.

Disposal

Unusable systems or systems beyond repair must be disposed of in accordance with the regulations on refuse disposal currently valid in the respective country.

The aluminium housing should be recycled. If possible, remove the plastic front panel.

All electronic components can be simply dismantled. They should be disposed of as special waste. SICK AG will not accept back unusable systems or systems beyond repair.

When dismantling and disposing of components, provisions relating to occupational safety, the environment and disposal should be observed.

3 Product Description

3.1 Characteristics

Special characteristics of the WSU/WEU 26/2 photoelectric safety switch are:

- easy installation
- universal functionality
- solid construction
- various connecton options
- universal power supply
- wide scanning range

3.2 How the device functions

The housing of WSU/WEU consists of die-cast Aluminium. In the WSU, an infrared sender diode emits pulse modulated light (Fig. 3).

If the light path is uninterrupted the output relays in the WEU are de-energized.

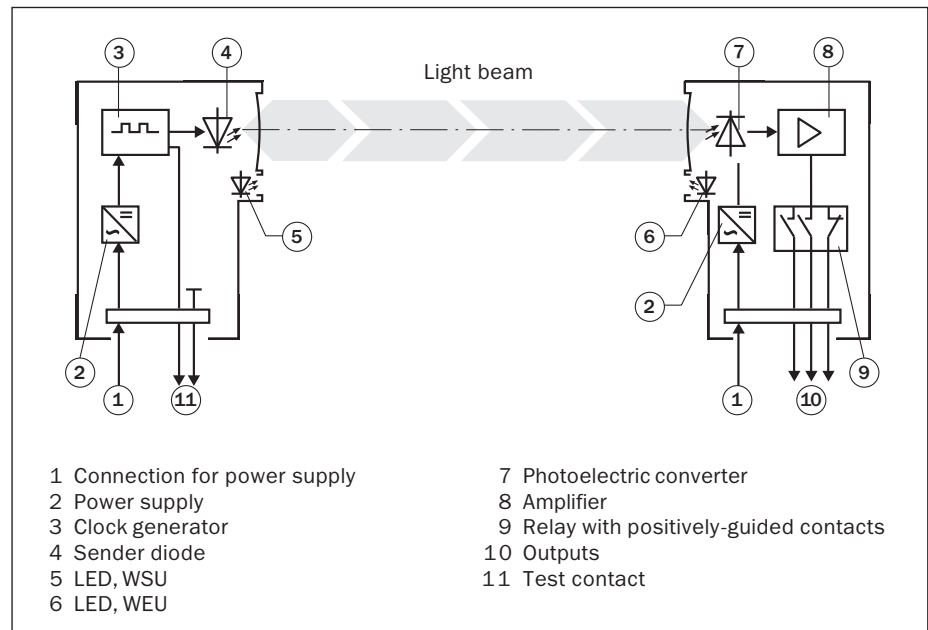


Fig. 3: Principle of function of the WSU/WEU 26/2, AC version

Diagnostic lights on the instruments signal the various operating conditions (see 8 *Diagnostic Elements*). Their display, however, is not safety related.

The diagnostic lights also serve as error diagnostics, see 8, *Diagnostic Elements*.

4 Mounting

4.1 Positioning the sensors

The WSU/WEU can be operated in any position. Regulations regarding safety distances must be observed as well as sufficient height of beams above floor.

4.2 Safety distance

The WSU/WEU must be mounted such that, if the light beam is broken during hazardous movement of the machinery, the point-of-operation can only be reached when this hazardous movement has ceased. For this purpose, a safety distance S must be maintained between the nearest trapping point and the light beam (Fig. 4). The safety distance depends on the machine stopping time and on the approach speed of the personnel.

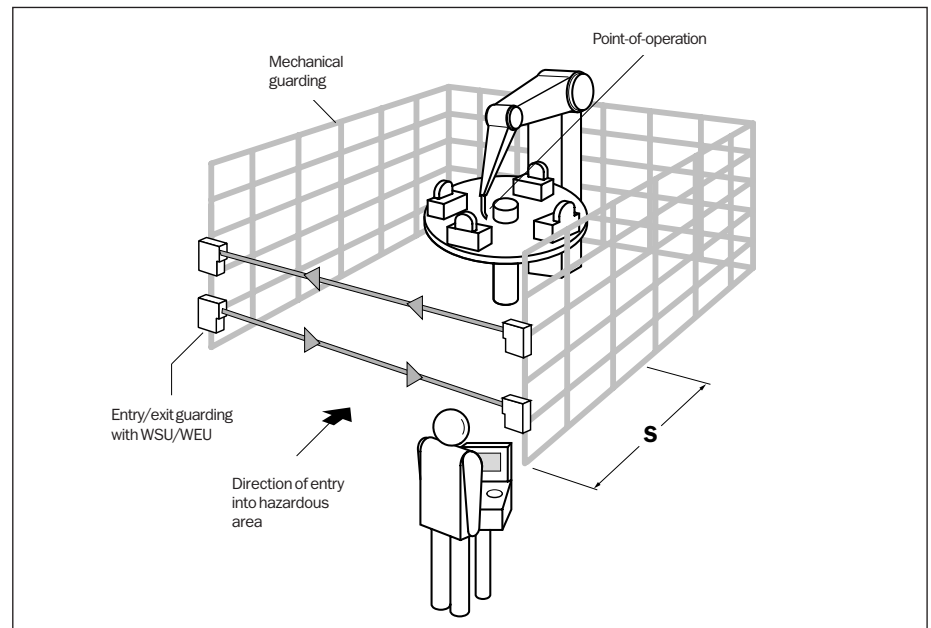


Fig. 4: Safety distance S to light beam

The machine stopping time must be determined by repeated measurements under practical conditions. 1.6 m/s is the recommended (by EN 999) approach speed.

The safety distance is calculated as follows:

$$\boxed{}$$

$$S = K \cdot T + C$$

- S Safety distance (mm)
 K Approach speed 1.6 m/s
 T Machine stopping time (ms) + response time of WEU
 (see *Technical Data*)
 C Dependent on number of beams (1, 2, or 3), see *Table 1*

Number of beams	1	2	3
Height of beam(s) above floor (mm)	750	400 900	300 700 1100
C	1200	850	850

Tab 1: Height of beams above floor

**Maintain safety distance!**

The WSU/WEU must be mounted such that, if the light beam is broken during hazardous movement of the machinery, the point-of-operation can only be reached when the power-driven machinery is no longer in a hazardous state.

For this purpose, a safety distance must be maintained between the light beam and the nearest boundary of the point-of-operation. This safety distance is determined according to pr EN 999.

EN 999 Safety of machinery Approach speed of body parts for arrangement of protective systems

**Danger of non-detection**

People within the hazardous area but outside the light beam are not detected. It must, however, be ensured that any hazardous state can only be initiated when there is no one in the hazardous area.

The WSU/WEU may not be utilised as a hand- and finger protection system.

Use and mounting of the protective systems is subject to the relevant official rules and regulations. These provisions differ depending on the area of application.

4.3 Distance to reflective surfaces

Reflective surfaces located (placed or fixed) within the sender and receiver range, may cause reflection and thus prevent an obstacle from being reliably detected (Fig. 5).

For this reason, a **minimum distance “a”** from reflective surfaces to the optical axis (linear connection between transmitter and receiver) must be maintained (Fig. 6). The distance “a” is dependent on the distance between the sender and receiver (Fig. 7).

Testing for spurious reflection is described in Section 6 *Test Instructions*.

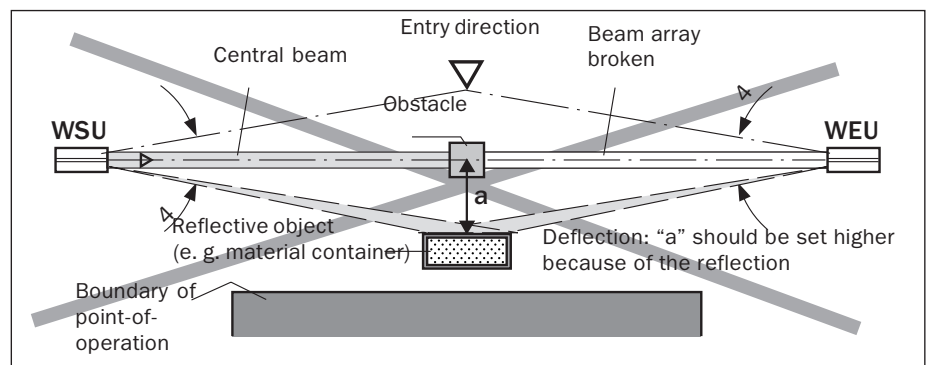


Fig. 5: Incorrect mounting: reflective object in divergent light beam. No detection of the obstacle due to reflection. No protection.

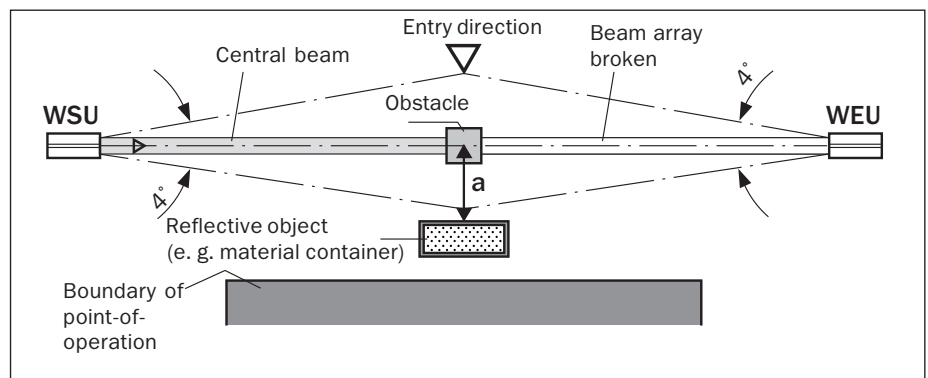


Fig. 6: Correct mounting, correctly aligned: reflective object outside divergent light beam. No reflection. The obstacle is clearly detected.

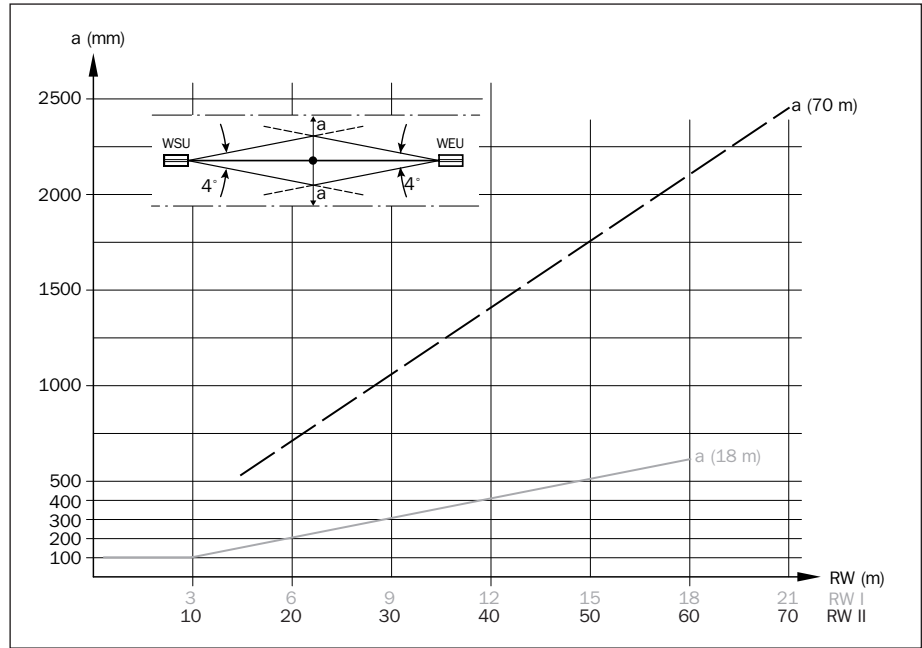


Fig. 7: Distance "a" as a function of scanning range RW

4.4 Multiple safeguarding

When using two WSU/WEU units in a protective system, the possibility of mutual interference must be excluded. Since the light beam of the WSU diverges, the cross-section of the beam increases as the distance between the WSU and WEU increases. The following conditions must therefore be met when arranging the WSU/WEU (Fig. 8).

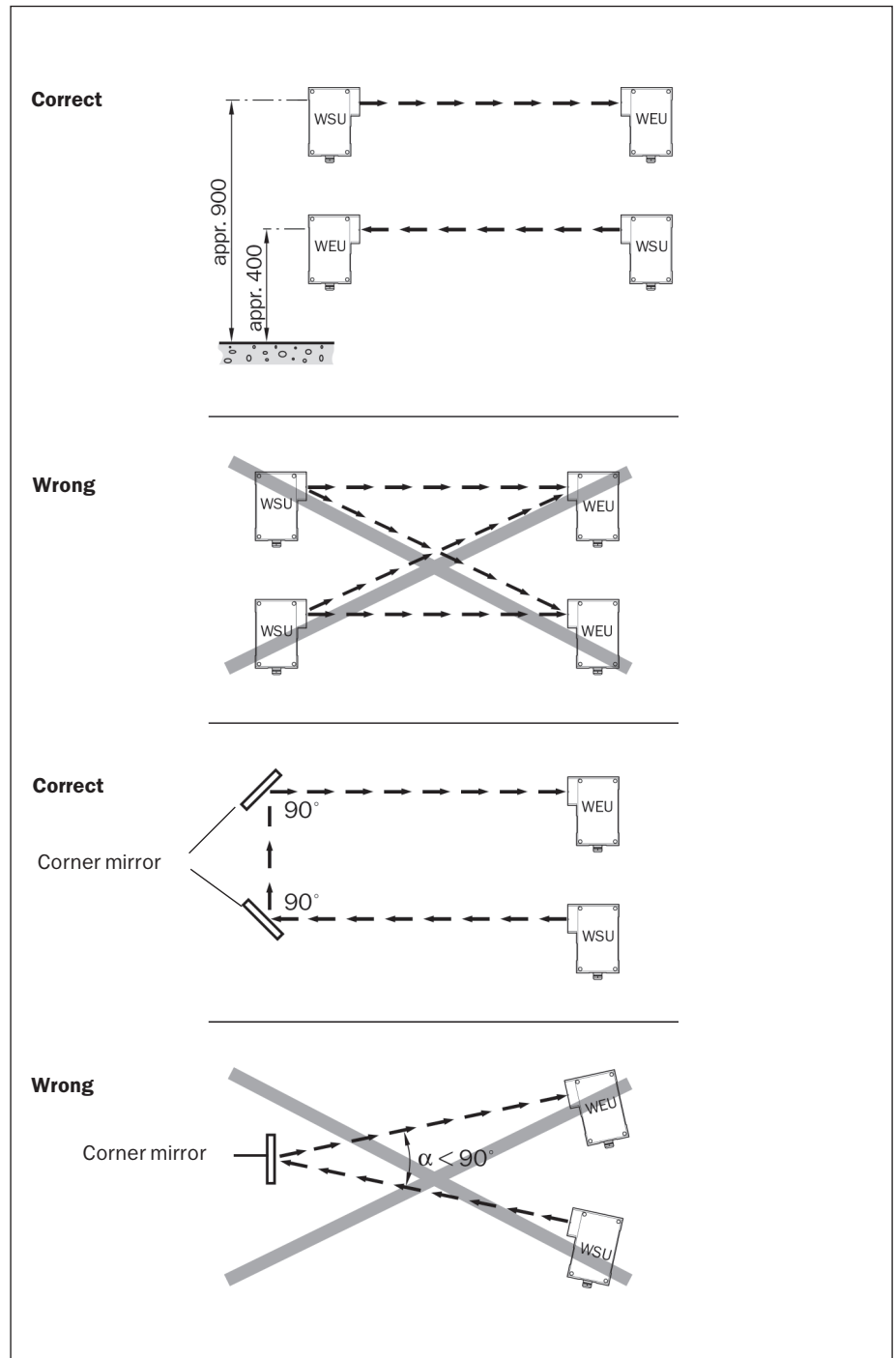


Fig. 8: Safeguarding a hazardous area with WSU/WEU

4.4.1 Mutual interference

The transmitted light beam of the WSU must only be received by the corresponding WEU. To prevent mutual interference between several WSU/WEU installations arranged adjacent to or above each other, the specified beam diameters must be taken into account when mounting the devices (*Fig. 9*), see *9 Technical Data*.

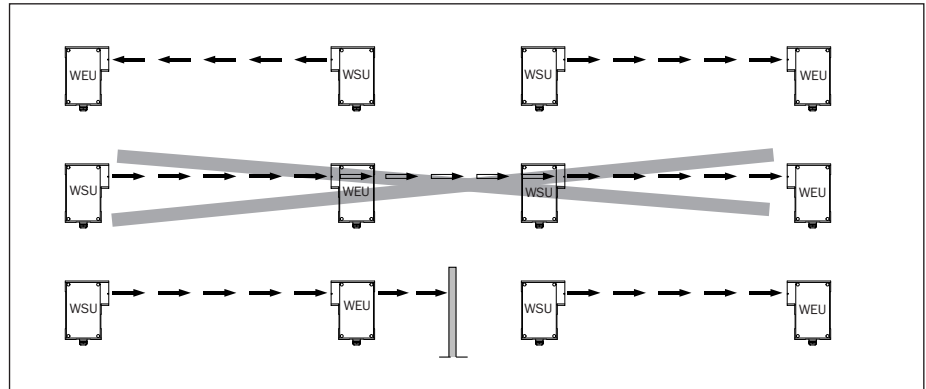


Fig. 9: Mounting of two WSU/WEU units in series



WARNING

There are two versions of WSU ...

... for operating ranges 0.5 - 18 m and 15 - 70 m. The WSU for 15 - 70 m must not be used for operating ranges below 15 m. The operating range is given on the information plate attached to the device.

4.5 Mechanical mounting

WSU and WEU units can be mounted on one of the sides of their housing or using the mounting bracket, depending on site circumstances. The mounting bracket greatly assists alignment. The devices can be mounted in any operating orientation. However, the WSU and WEU should be mounted such that the axis of the light beam emitted by the WSU always matches the axis of the WEU optic (alignment sight).

Note The mounting brackets should be affixed so that all fixing screws are easily accessible for alignment purposes. *Fig. 10* shows examples. The devices should be mounted such that the opposing device can be aligned using the alignment sight.

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

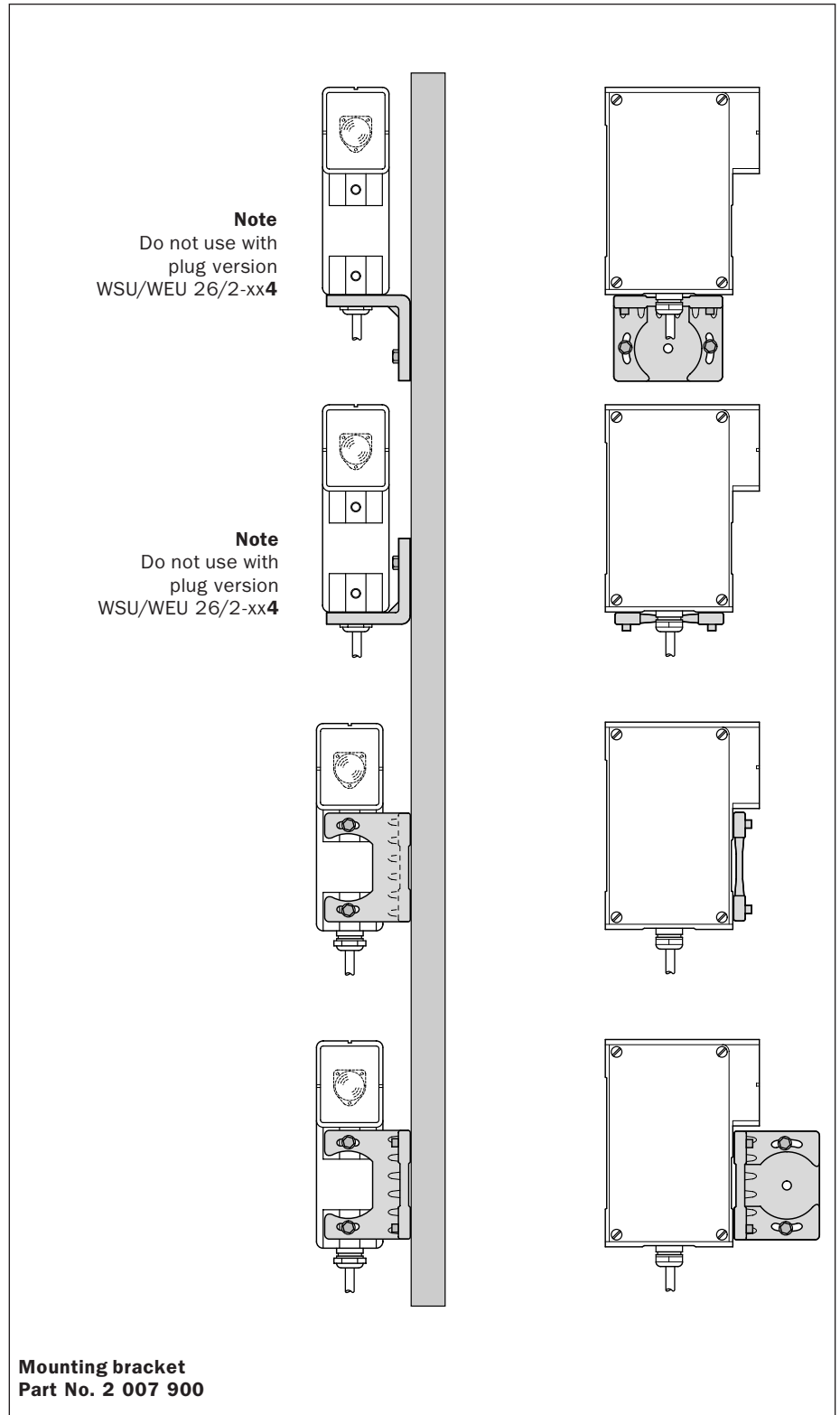


Fig. 10: Mounting options using a mounting bracket

4.5.1 Corner mirrors

In conjunction with corner mirrors the WSU/WEU provides multisided, two-beam access protection (Fig. 11).

Note The use of corner mirrors reduces the scanning range of the WSU/WEU system as indicated in the table.

Note The use of more than 2 mirrors (Fig. 12) requires a very accurate alignment. Use of alignment aid AR 60 is recommended.

Number of mirrors	0.5 ... 18 m WSU	15 ... 70 m WSU
1	17 m	68 m
2	15.5 m	61 m
3	13 m	51 m
4	11 m	42 m

Tab. 2: Reduction in scanning range when using corner mirrors with $\alpha = 90^\circ$

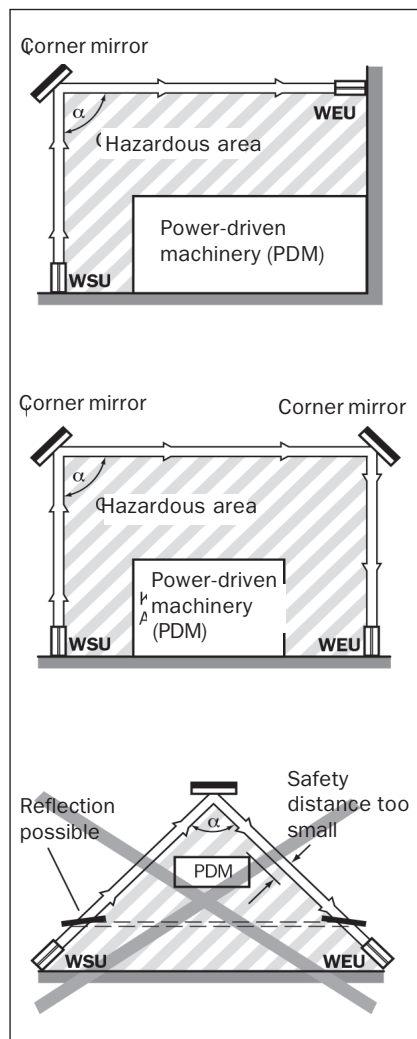


Fig. 11: Multi-sided protection of hazardous areas

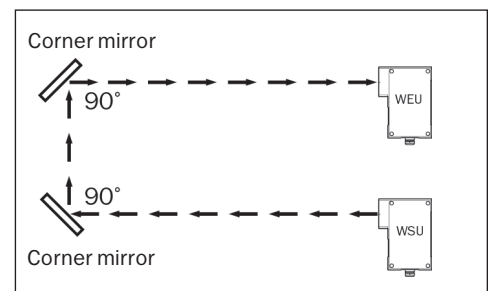


Fig. 12: Two-beam protection with a WSU/WEU-26-system

5 Electrical Installation

Note Depending on type, the WSU/WEU 26/2 photoelectric safety switch is available for the following supply voltages:

- 24 V DC,
- 115 V AC or
- 230 V AC

The information plate gives details.

The two system components must be of the same voltage version and the same scanning range.

Before connection, check that the supply voltage and mains frequency on-site are consistent with the specifications on the information plate.

The cable is fed through the PG connector and connected inside the device, or connected to the equipment plug. The wiring diagram is depicted again on the housing cover of the respective device.

The enclosure rating of the devices can only be guaranteed when the cable is properly clamped in the PG connector and the housing seals fit correctly. Where long leads are used, the cable cross-sections should be chosen to ensure the devices are always supplied with the required voltage (see 9 *Technical Data*).

Single- or fine-wire conductors up to 1.5 mm² can be connected to the clamp terminals (to VDE 0607). Strip to length: 11 mm.



WARNING

Switch off power!

The electrical connection of the WSU/WEU must only be made or changed with the power disconnected. Unscrew the housing cover to connect the WSU/WEU with a PG connector.



WARNING

Use both normally-open contacts!

At least two outputs must be connected to the control unit of the machine being protected (*Figs. 22/23*). An electromagnetic contact element (relay) must be connected to each of the two outputs (normally-open contacts).



WARNING

Use normally-open outputs!

In new installations, both normally-open outputs must be independently supplied to two contact elements (e.g. contactors, relays). The normally-closed output should be used only for functions that are not directly safety-related.

Explanation

In general, the normally-open contacts should be used. However, in older installations a normally-open / normally-closed combination may have been selected. This no longer conforms to present-day safety requirements. Should the WSU/WEU be installed on existing installations, both normally-open contacts should be connected in series to the normally-closed contact as a second channel.

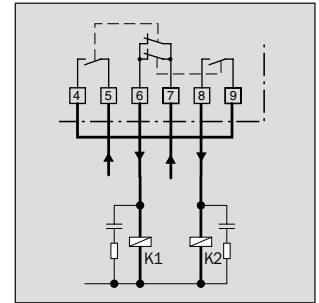


Fig. 13: Installation in old factories

5.1 Test instructions

The test function enables a check to be made on the connected contactor mechanisms. In the process, the sender is switched off when the normally-closed contact is opened. The testing function is triggered during a minimum opening time (see 9 *Technical Data*). The testing function should be performed via the machinery control system in the non-hazardous phase (e. g. during a non-hazardous motion). If the test fails, the power-driven machinery – initiated via the WEU – must receive a stop signal from the machinery control system.



WARNING

Use the testing function as described!

The test input must be used exclusively as described.

5.2 Spark suppression



WARNING

Spark suppressors are required when using an inductive load ...

... and must be connected in parallel to the inductive load (Fig. 14). Connections that are made in parallel to the output contact are not permissible, and may result in unsafe operation.

Diodes must not be used as spark-suppression elements.

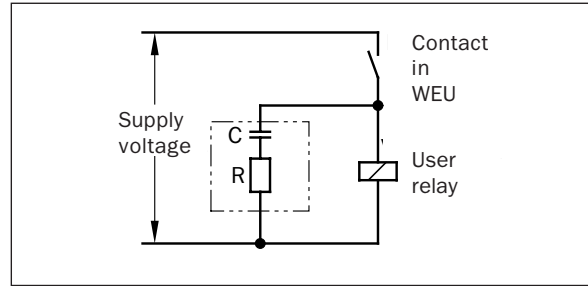


Fig. 14: Wiring for inductive contact element

Supply voltage	Part No.	R	C	Option: plastic encapsulated; connection wires NYAF 0.5 mm Ø with spade terminals; fixing with adhesive pad or cable ties.
V		Ω	μF	
115 ... 230	6 001 224	220	0,22	
24	6 001 225	100	2,2	

Tab. 3: Summary of spark-suppressor values

5.3 Short-circuit monitoring

The cables from the output contacts are not monitored by the WEU for short circuits.



Suitable measures

Suitable steps should be taken for monitoring short circuits. These could be

- Short-circuit safe (protected) routing of cables from the WEU to the contact elements
- Screening output cables individually and connect screening to 0 V
- Incorporating both contacts to differing voltage levels
- Using relay(s) at the outputs where the pull in voltage must be greater than $U_v/2$.

5.4 Overvoltage protection (fuse)

A fuse must be provided for the control circuit. The fuse rating must correspond to the maximum current drawn by the output relay.

5.5 Wiring diagram

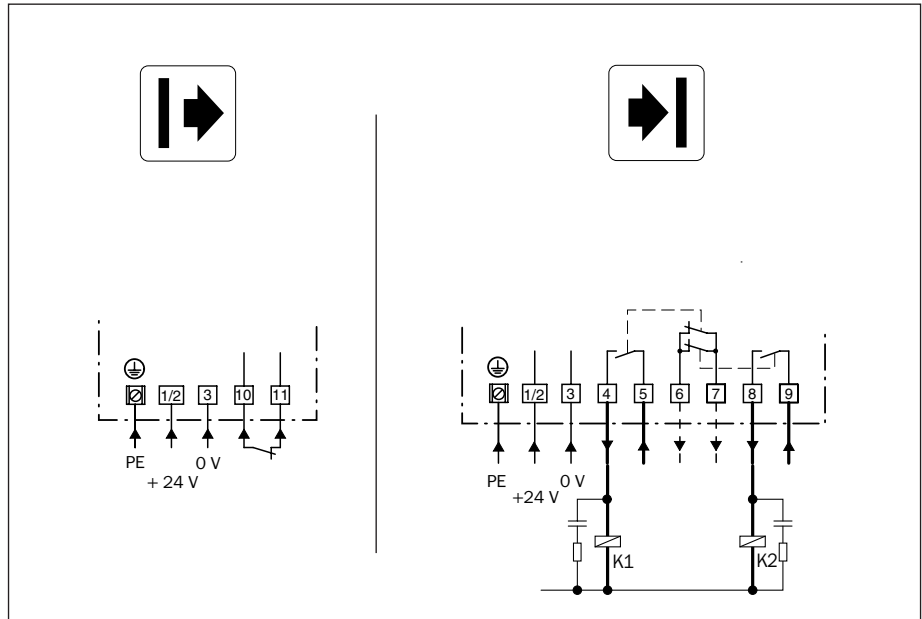


Fig. 15: Wiring diagram WSU/WEU for 24 V DC supply, with PG connector

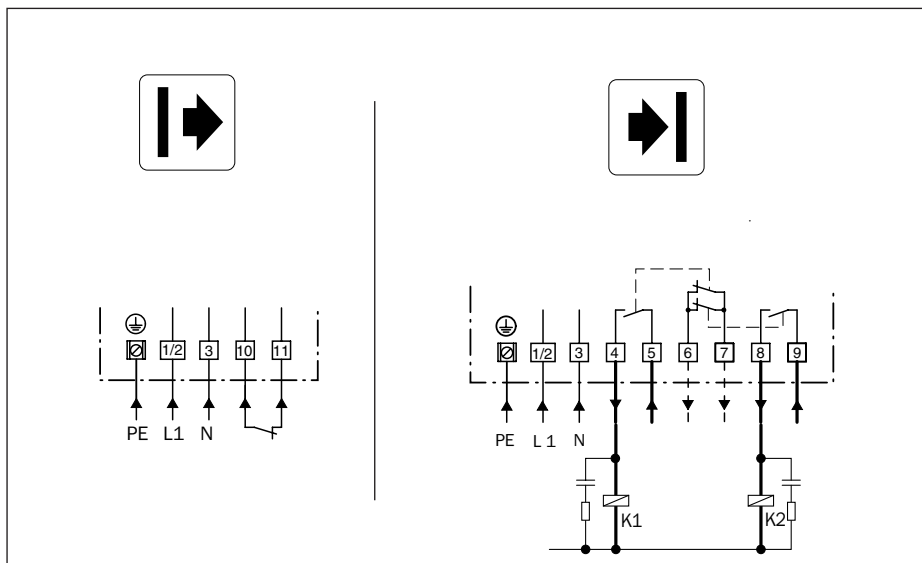


Fig. 16: Wiring diagram WSU/WEU for AC supply, with PG connector

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

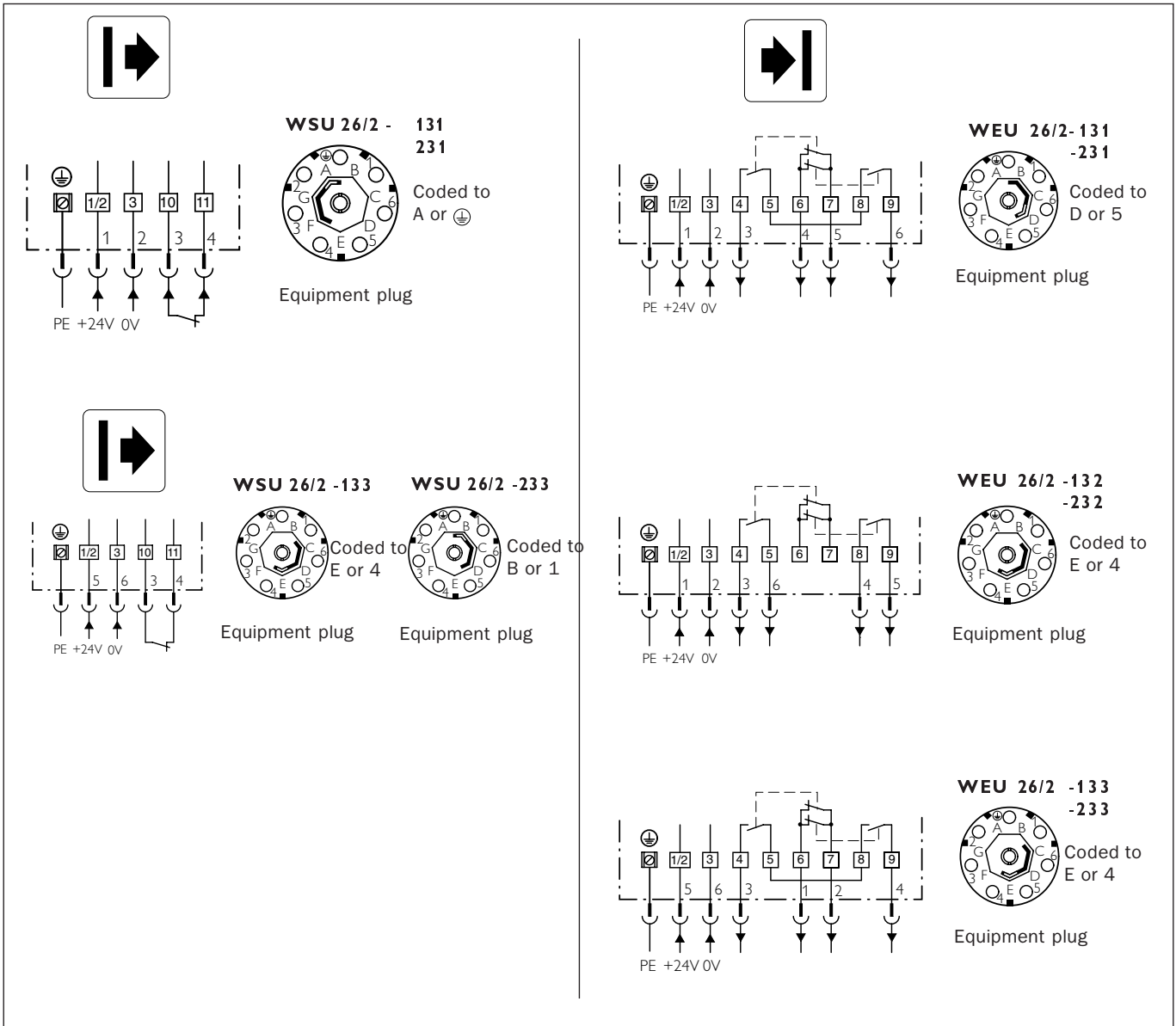


Fig. 17: Wiring diagram WSU/WEU for 24 V DC supply, interchangeable design

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

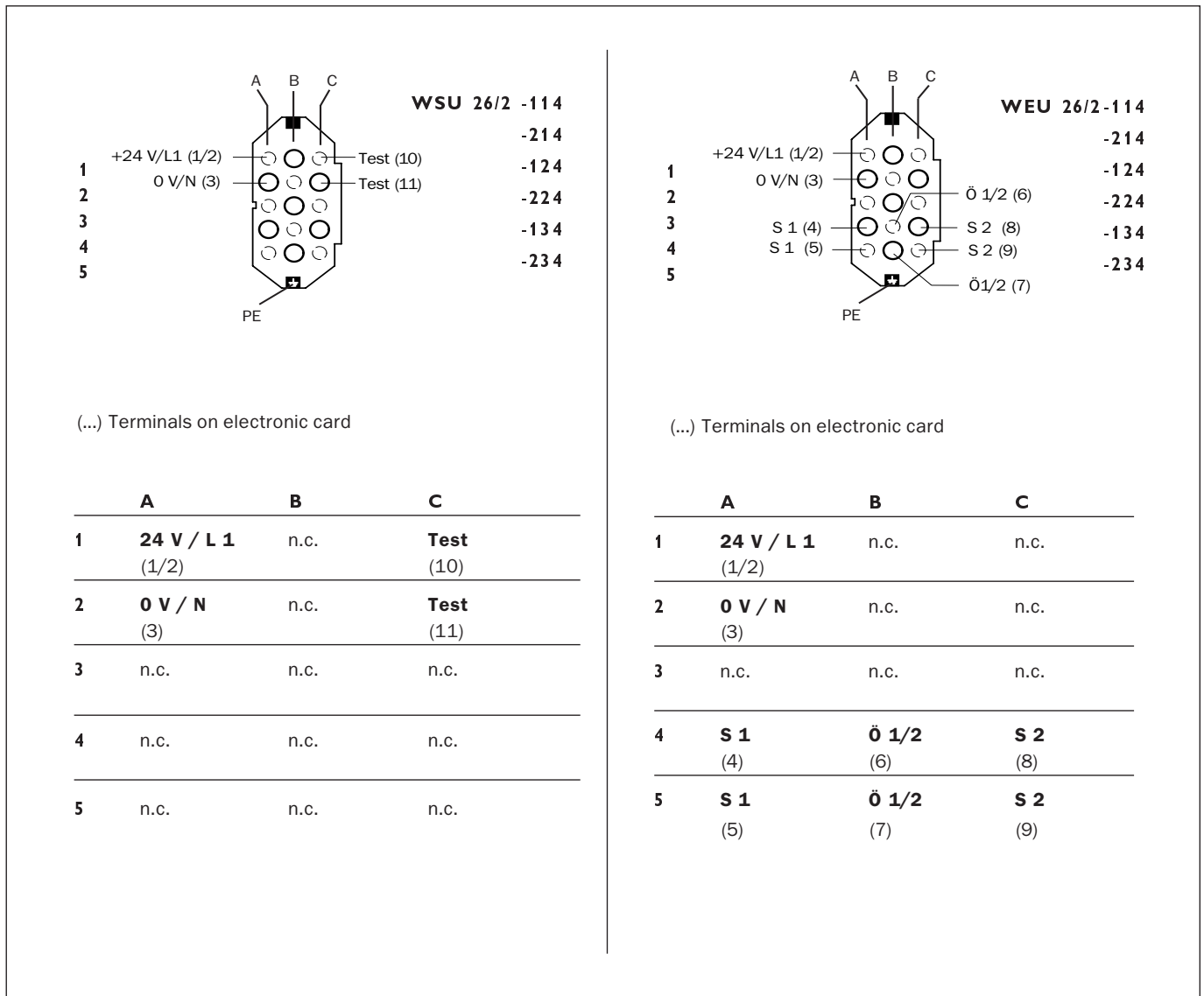


Fig. 19: Pin assignment WSU/WEU 26/2, AC/DC version with equipment plug 15 P + E

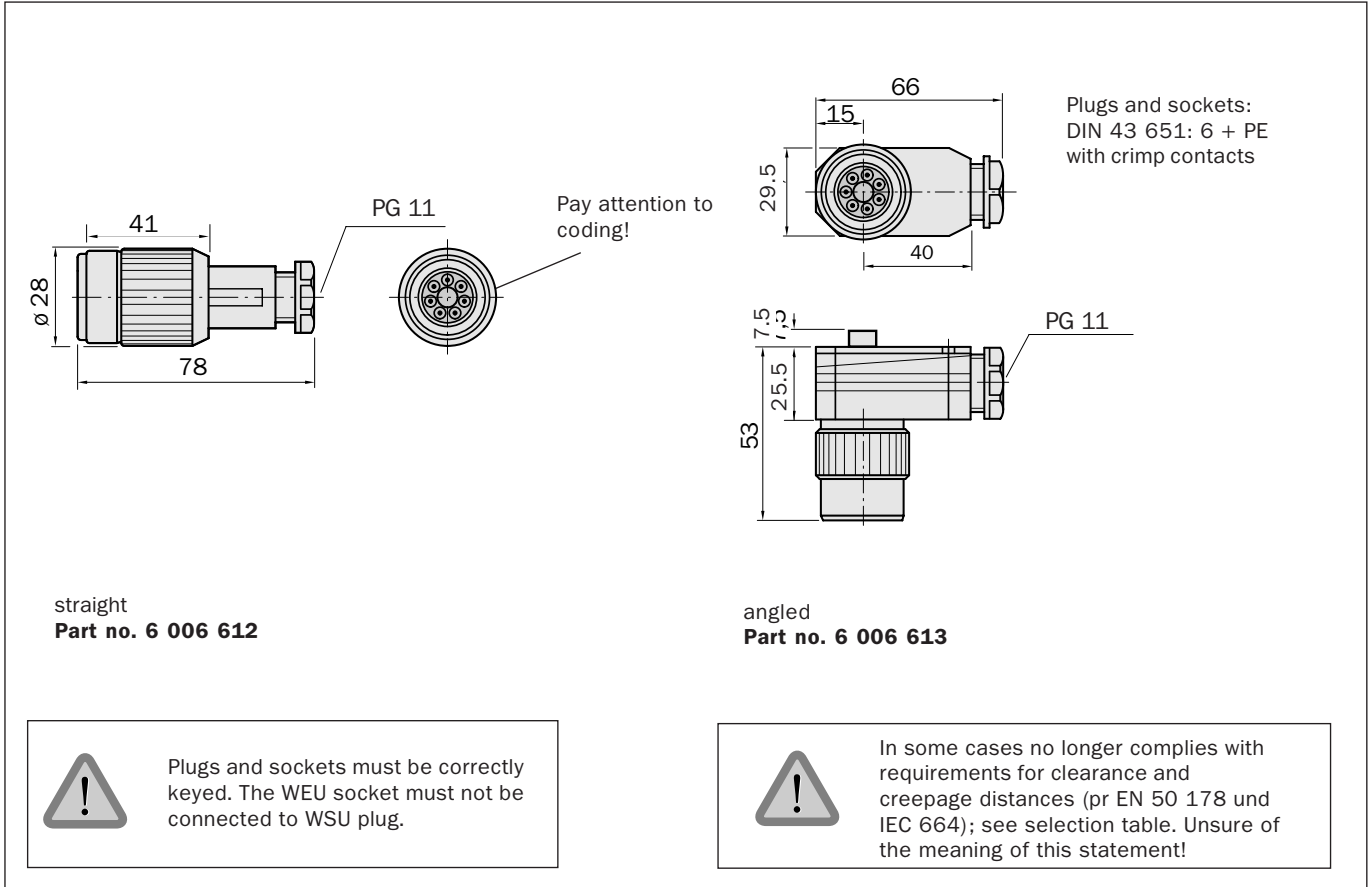


Fig. 20: Cable receptacles 6 + PE

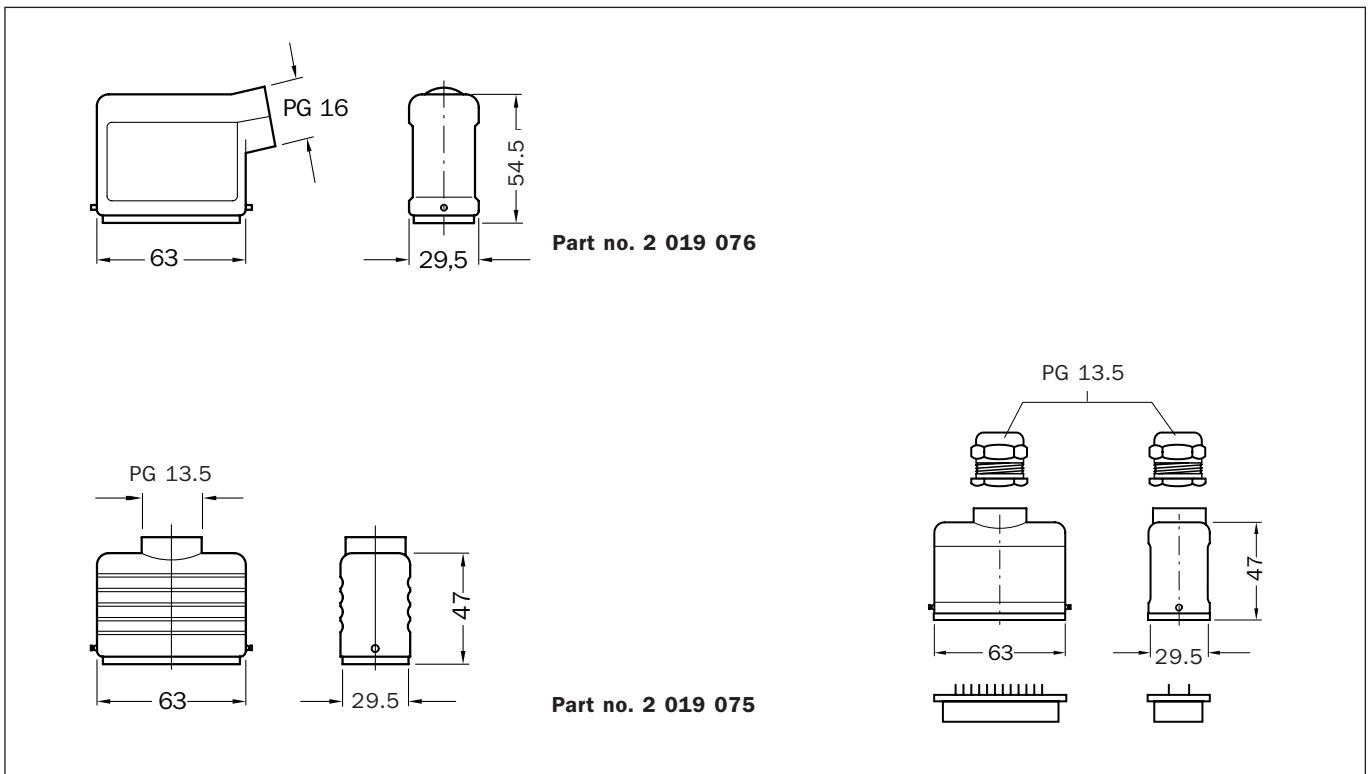


Fig. 21: Cable receptacles 15 P + PE

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

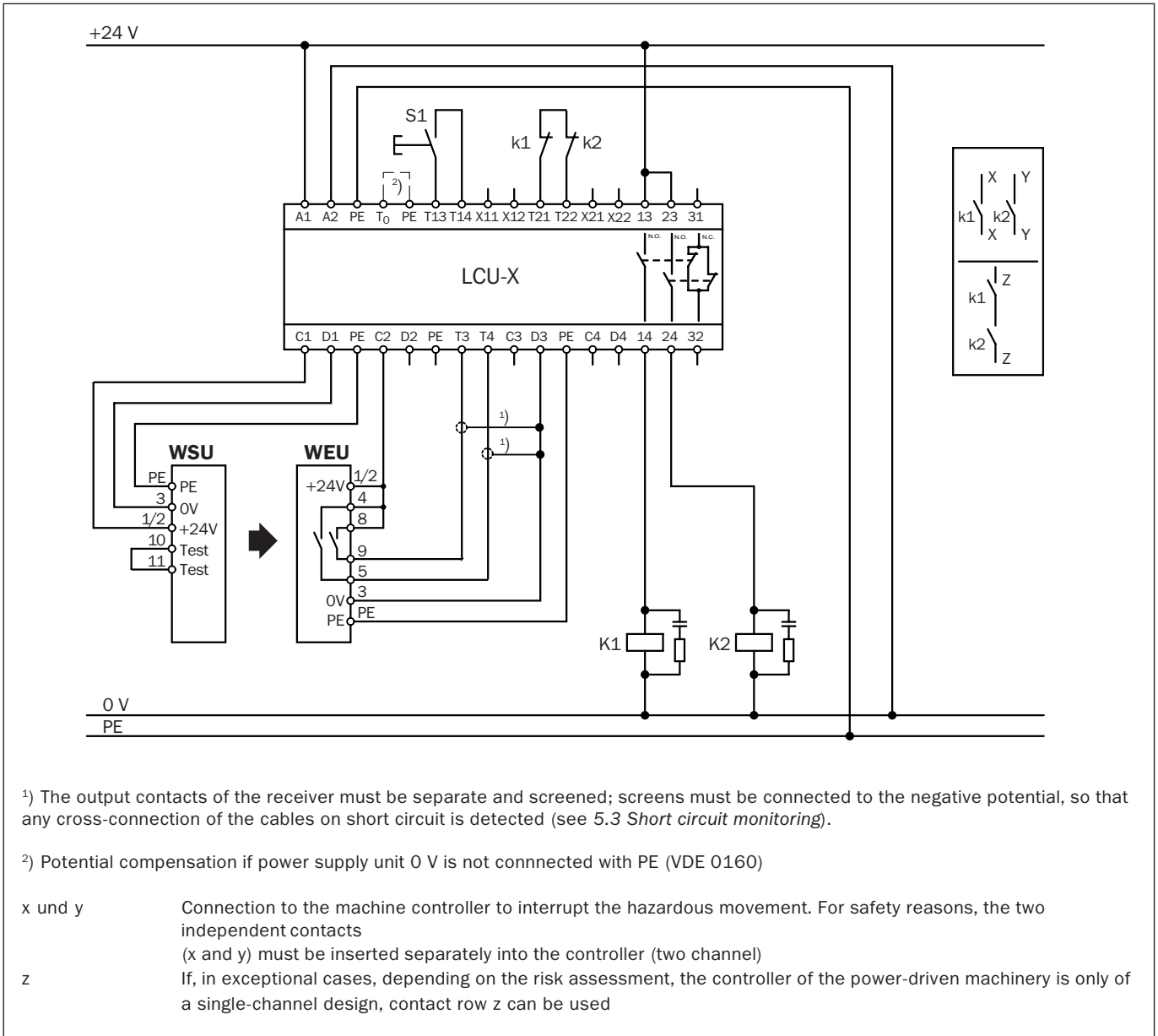


Fig. 22: WSU/WEU 26/2 with LCU-X safety interface

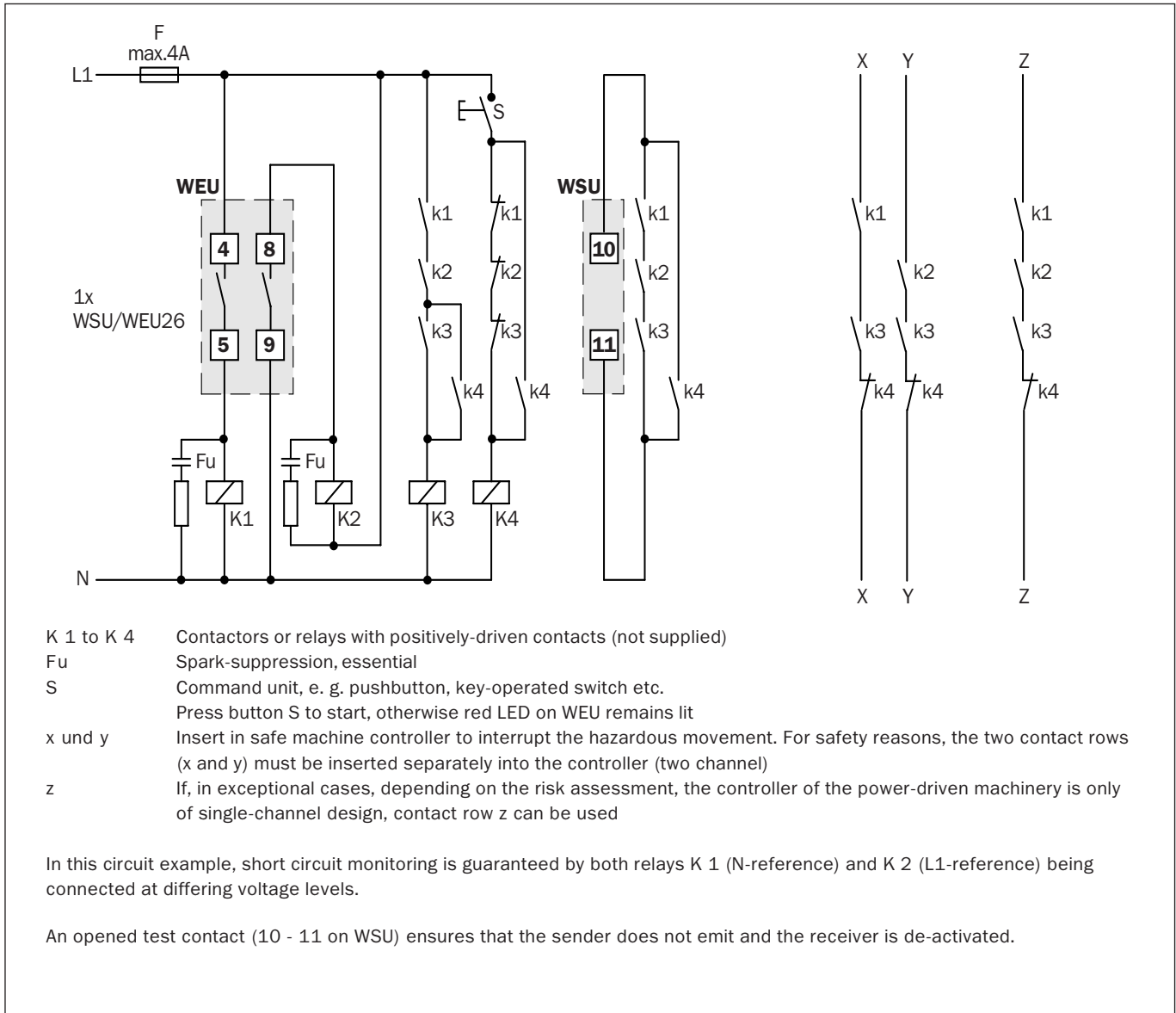


Fig. 23: Example connection with a single WSU/WEU-26/2 system

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

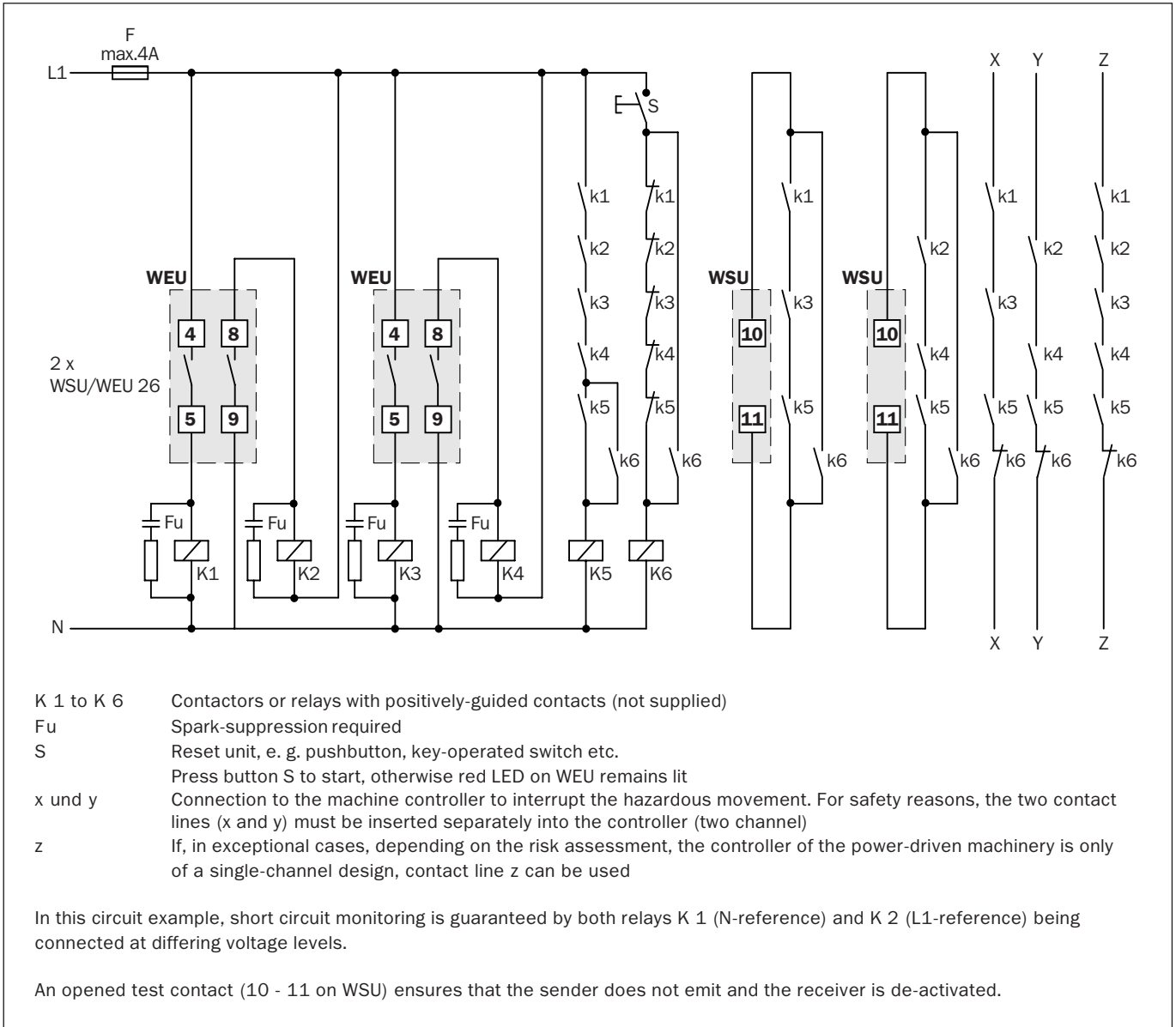


Fig. 24: Example connection with two WSU/WEU-26/2 systems

5.6 Alignment of WSU and WEU

After checking the electrical connections, loosen the fixing screws on the WSU/WEU and roughly align the devices to each other using the alignment sight (Fig. 25).

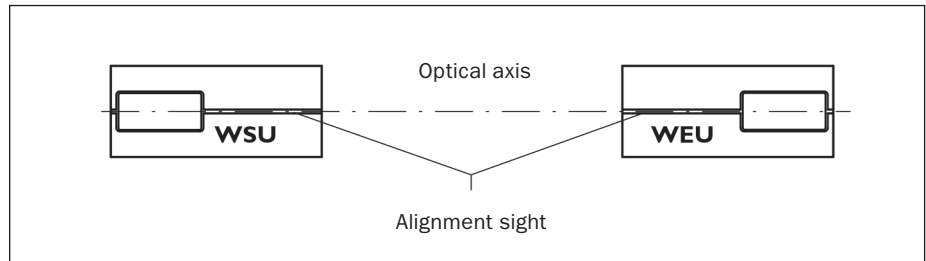


Fig. 25: Alignment with the aid of the alignment sight

If the circuit example Fig. 23 or 24 is used: For further alignment keep pressing button S or jumper terminals 10 and 11 on the WSU and switch on the device. When this is done, the LED on the WSU (yellow LED) lights up (Fig. 26).

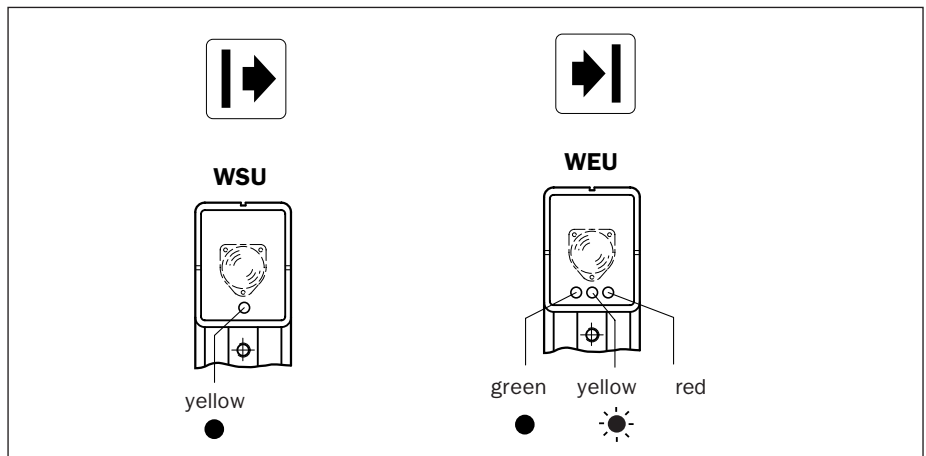


Fig. 26: LEDs of the WSU und WEU

Align the devices to each other so that the green LED on the WEU lights up.

For optimum alignment, determine the limits of the transmission and receiving range by pivoting the sender and receiver units horizontally and vertically. When the device leaves its respective optical range, the yellow LED on the WEU begins to flash. Then fix the sender and receiver units in the middle of the determined optical range.

Note The yellow LED on the WEU must be permanently lit.

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

5.6.1 Alignment of WSU and WEU with alignment aid AR 60

For precise alignment of the WSU and WEU the alignment aid AR 60 is available. The alignment aid is clamped on the front of the WSU and WEU respectively on a bracket (*Fig. 27*).

The AR 60 emits a visible laser beam which exactly marks the optical axes of WSU and WEU if they are correctly mounted.

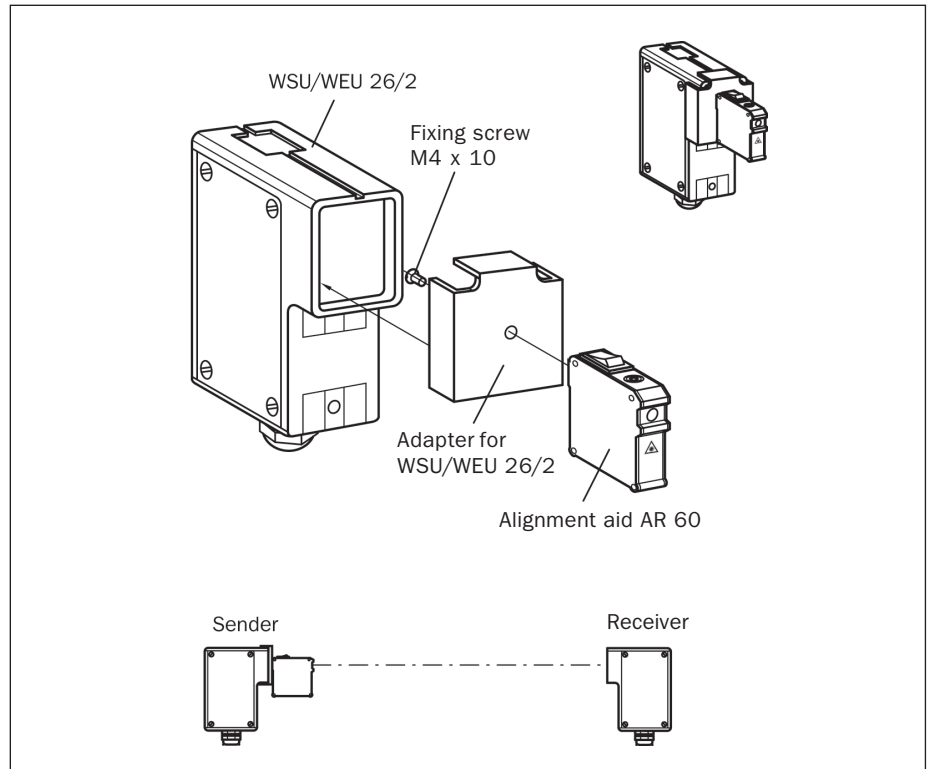


Fig. 27: Laser alignment aid AR 60 and WSU/WEU

Note Incorrect alignment may mean that an obstacle is not detected or that operational safety is not achieved (*Fig. 25*).

6 Test Instructions

6.1 Pre-commissioning tests

- Inspection prior to commissioning is used to confirm compliance with the safety requirements specified in national or international regulations, in particular the machinery safety regulations or the provision and use of work equipment regulations.
- Inspection of the effectiveness of the protection equipment on the machine in all the operating modes in which the machine can be placed.
- Qualified personnel must, prior to starting work, instruct the personnel operating the machine protected by the safety device. Instruction is the responsibility of the machine operating company.

Note Incorrect alignment may mean that an obstacle is not detected or that operational safety is not achieved (*Fig. 25*).

The light beam must not be unintentionally reflected by reflecting surfaces. Reflections can be detected as follows:

Using an object (surface: 100 x 100 mm²), break the light beam continuously and without any gaps, starting in front of the WEU and moving up to the WSU. In the process, the red diode on the WEU must illuminate continuously. If this is not the case, an inspection should be made to establish the diversion path the beam takes from the WSU to the WEU.

This type of functionality check must be performed:

- daily before commencing production;
- after modifying the WSU/WEU alignment;
- after all maintenance and service work carried out on the protection system.

6.2 Regular testing of the safety device by competent personnel

- Inspection should be carried out in accordance with valid national regulations at the intervals defined in the regulations. The objective of these inspections is to detect any changes or modifications to the protection device since original commissioning.
- Inspections should also be carried out whenever major modifications are made to the machine or protection equipment, as well as after re-adjustment or repairs in the event of damage occurring to housing, front lens, connecting cable, etc.

6.3 Daily testing of the safety module by authorised personnel

Daily testing provides assurance that an effective personnel protection system is in place.

It is the duty of the operator's staff to perform testing before each working day.

Inspection by fully covering the light beam: the red diode on the receiver unit must illuminate.



WARNING

Inspection

If the green or yellow diodes illuminate on the WEU, then no more work may be done using the machinery. It is recommended in this case to check the system as specified in *6.1 Pre-commissioning tests*.

7 Maintenance

The system requires no maintenance. However, if the exit window is very dirty, a clean brush should be used to remove any dust deposits. The exit window must then be cleaned using a soft, damp cloth.

The following cleaning agents are recommended:

- Non-corrosive window cleaners
- Anti-static plastic cleaners

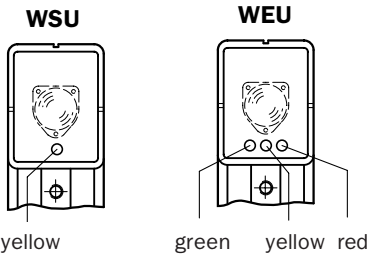
Do not use any cleaning agents containing alcohol.

Note If the module has to be opened due to faulty operation, the housing must be cleaned thoroughly before opening to prevent dirt ingress. Switch the power off before doing this.

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

8 Diagnostic Elements



Indicator lamp

WSU yellow	WEU green	WEU yellow	WEU red	Cause	Inspection and rectification
○	○	○	●	No voltage supply to WSU Break between terminals 10 and 11 (Test contact)	Check voltage Check connection
●	○	○	○	No voltage supply to WEU	Check voltage on WEU
		◐	●	Break on relay contact, Relay defective	Exchange device
●	○	◐	●	Device misaligned Front lens dirty	Re-align WSU and WEU devices Clean front lens of WSU and WEU
				WEU receiver defective	Exchange device
				WSU sender does not transmit	Briefly switch off voltage at WSU, then switch on (at least 1 s), and if no function after this: exchange WSU
●	●	◐	○	Device or mirror misaligned Front lens of WSU/WEU or mirror dirty	Re-align device or mirror Clean
●	○	●	●	Electronics energize Spurious transmitters Defective electronics card	Switch off voltage briefly and switch on (at least 1 s) WEU may only respond to WSU allocated to it Exchange device

○ LED off ● LED illuminated ◐ LED flashing ◑ LED no influence

9 Technical Data

9.1 Overview technical data

	min.	typ.	max.
General system data			
Protective field range	0,5 m 15 m		18 m 70 m
Number of beams	1		
Synchronization	optical, without separate synchronization		
Light beam diameter in front of WSU divergence angle		23 mm	4°
Wave length of sender		950 nm	
Protection class	1		
Enclosure rating	IP 65 (connection plug) IP 67 (PG connector)		
Operating mode	Guard only without start and restart inhibit		
Supply voltage U_v	19.2 V DC 195.5 V AC 97.75 V AC	24 V DC 230 V AC 115 V AC	28.8 V DC 253 V AC 126 V AC
Frequency AC version	48 Hz		62 Hz
Ripple ¹⁾		1.2 V _{SS}	
Voltage if power fails (20 ms) ²⁾	18 V		
On-transition time After applying the supply voltage of sender and receiver		1.8 s	
Transmitter unit			
Test output Output current	for floating switches 10 mA		
Test input Reaction time on test Opening time of contact for test Test time	75 ms	50 ms	60 ms 150 ms
Power consumption Version 24 V DC Version 115 V AC Version 230 V AC		4 W 7 VA 7 VA	
Receiver unit			
Outputs Relay max. operating frequency 0.2 Hz (1 operation in 5 s)			
Response time			22 ms
Current	0.02 A		2 A
Voltage	24 V DC		250 V AC
Power (DC/AC)			144 W / 1380 VA
Mech. life expectancy (lifetime)			10 ⁷
Electr. life expectancy (lifetime) DC at 2 A current AC at 2 A current			80 x 10 ³ 50 x 10 ³
Switch-on time Normally-open contacts Normally-closed contacts		10 ms 9 ms	
Reference point for measured values: equipment plug or terminals			

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

	min.	typ.	max.
Power consumption			
Version 24 V DC		6 W	
Version 115 V AC		10 VA	
Version 230 V AC		10 VA	
Operating data			
Connection	Connecting cables (PG 13.5) Connectors		
Safety category	Type 4		
Tested to	EN 61 496 part 1 and pr EN 50 100 part 2		
Ambient operating temperature	-25 °C		+55 °C
Storage temperature	-25 °C		+70 °C
Air humidity (non-condensing)	15 %		95 %
Dimensions	see <i>Dimensional Drawings</i>		
Vibration resistance	5 g, 10 ... 55 Hz to IEC 68-2-6		
Shock resistance	10 g, 16 ms to IEC 68-2-29		
Weight			
Sender unit	0.9 kg		1.3 kg
Receiver unit	1.0 kg		1.4 kg
<p>⚠ ¹⁾ The voltage must not exceed or fall below the limit values.</p> <p>²⁾ In conformity with EN 60 204, external voltage supply for the devices must be capable of sustaining a short power interruption of 20 ms. Suitable power supplies can be obtained from SICK as accessories (Siemens Series 6 EP 1).</p>			

9.2 Dimensional Drawings

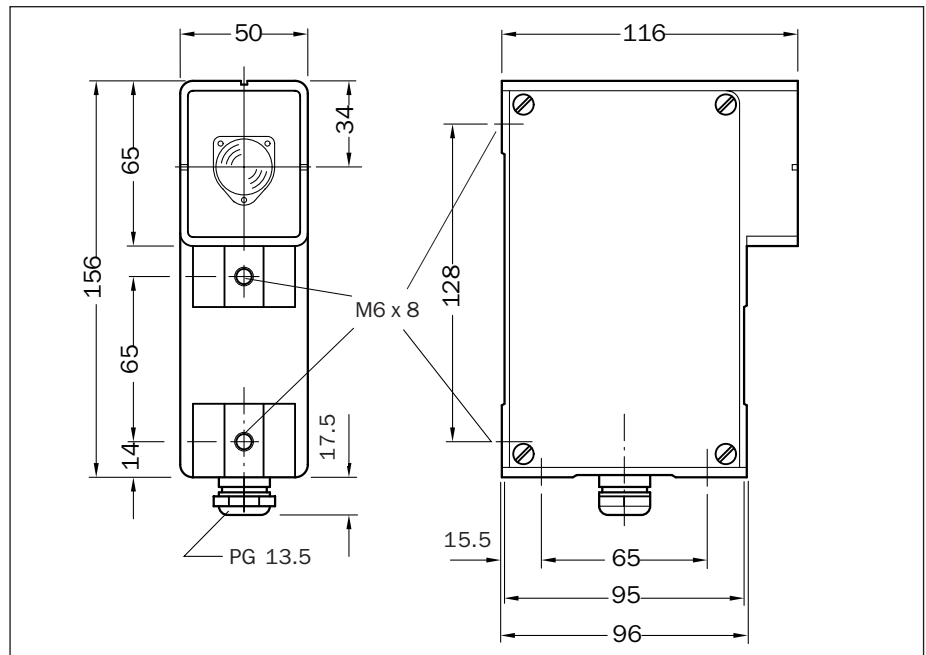


Fig. 28: Dimensional Drawing WSU 26/2-xx0 and WEU 26/2-xx0

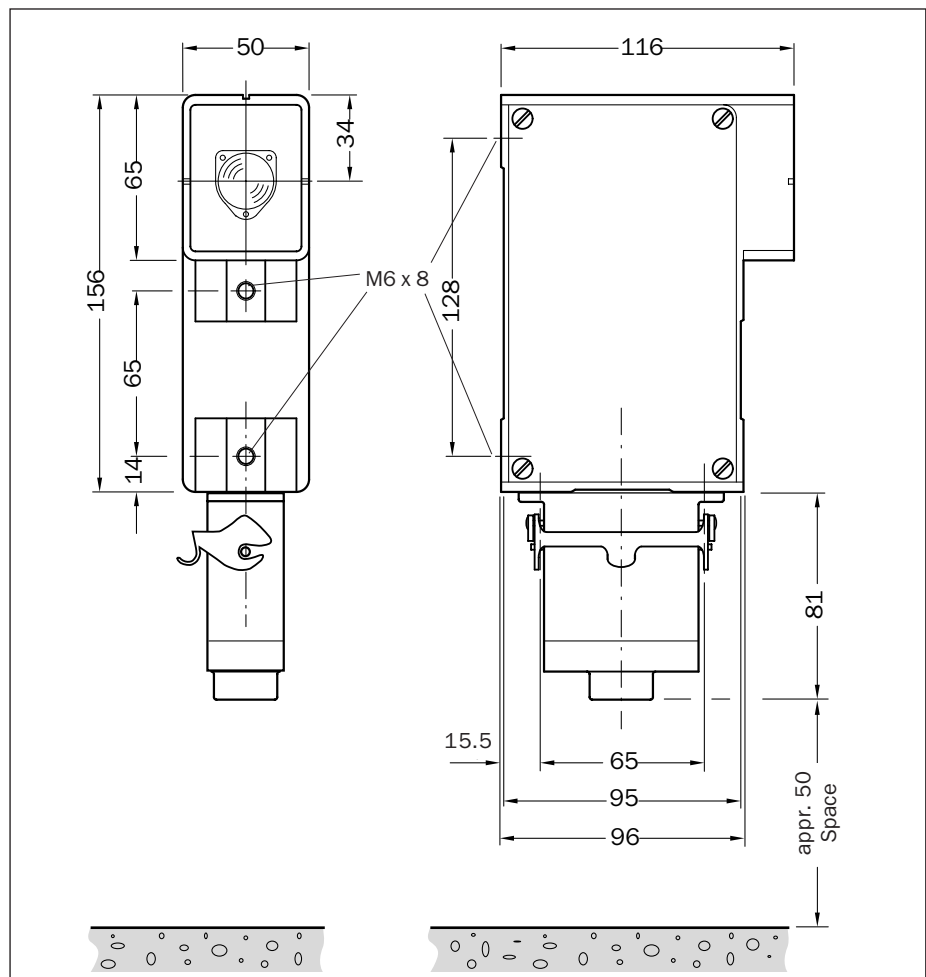


Fig. 29: Dimensional Drawing WSU 26/2-xx4 and WEU 26/2-xx4

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

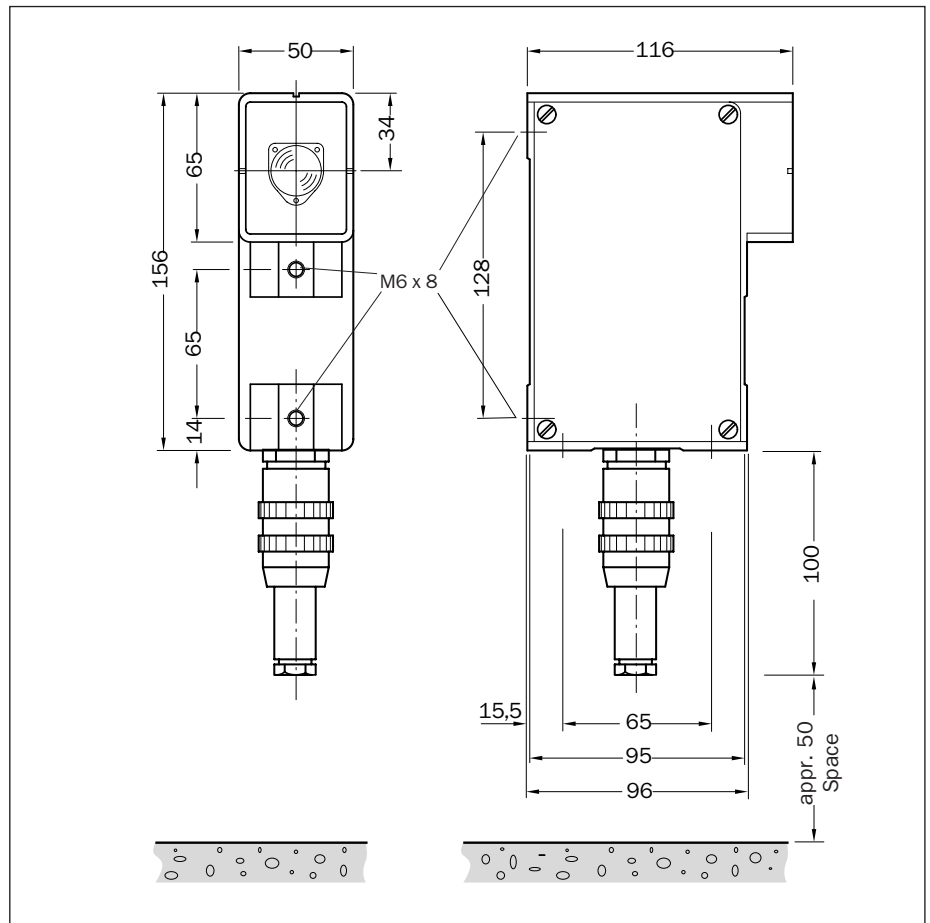


Fig. 30: Dimensional Drawing WSU 26/2-xx1 and -xx3 and WEU 26/2-xx1, -xx2 and -xx3

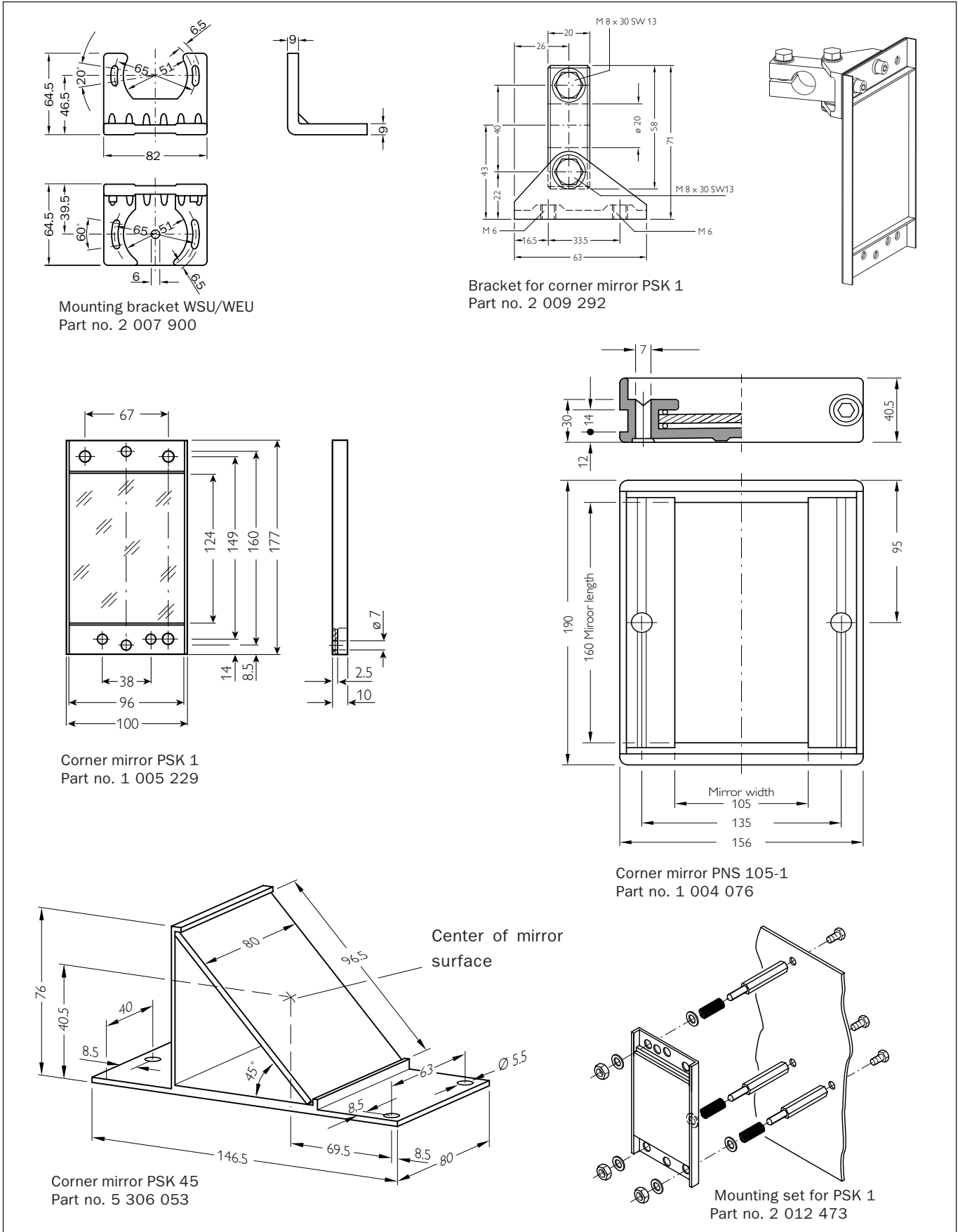


Fig. 31: Dimensional drawing accessories

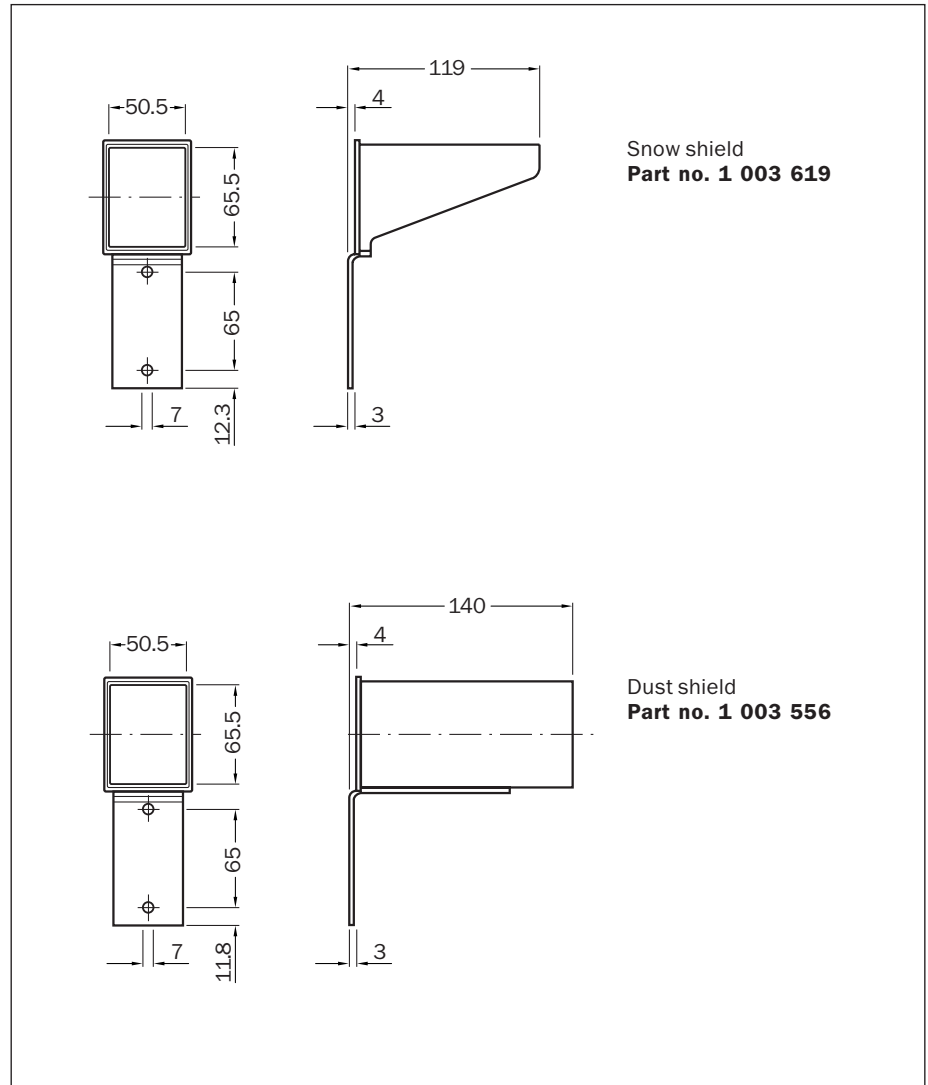


Fig. 32: Dimensional drawing snow/dust shield

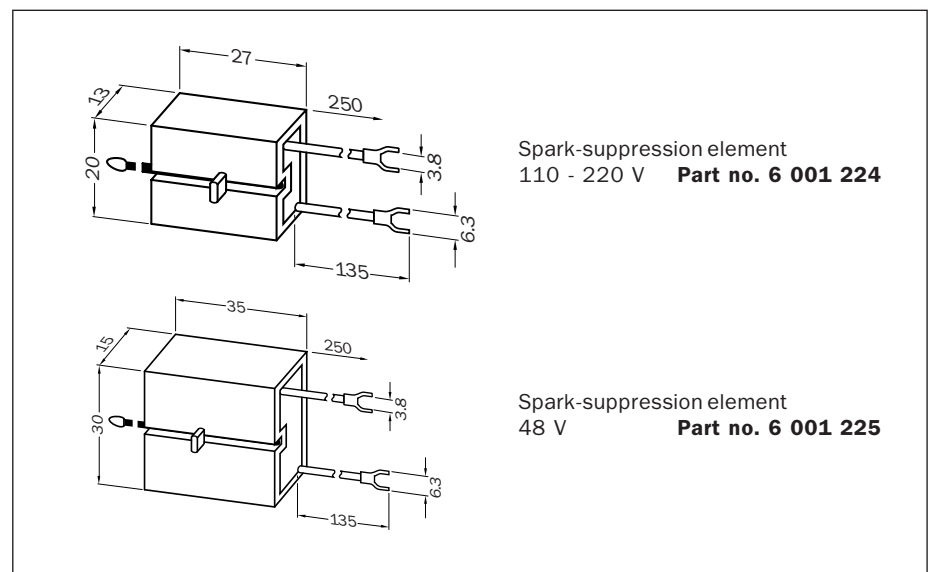


Fig. 33: Dimensional drawing spark-suppression element

10 At a glance: Comparison of old versus new devices

This has changed:

- The optical axis of the WSU/WEU 26/2 is shifted 6 mm toward the device connection
- There are two terminals for connection of the power supply: terminal 1/2 and terminal 3
- Voltage versions
 - 230 V AC
 - 115 V AC
 - 24 V DC
- A new adapter is required for AR 60
- No fiber-optic cable version is available
- An additional marking on the side identifies the middle of the beam
- Die Reichweiten haben sich geändert (siehe unten)
- For each range segment there is a sender and a receiver
- The beam diameter has changed (see below)
- Connector version: the previous connector no longer complies with requirements for clearance and creepage distances (VDE 0160 05/88 and VDE 0110)
- New front screen: may only be cleaned with plastic cleaner
- The power consumption has increased (see below)

Note Components of the (new) WSU/WEU 26/2 system cannot be combined of the (old) WSU/WEU 26 system. When exchanging in the event of repair please note that the following combinations are not possible:

~~WSU 26 with WEU 26/2
WSU 26/2 with WEU 26~~

Exchange in pairs.

	WSU/WEU 26	WSU/WEU 26-2	Value
Scanning range	0.5 to 30	0.5 to 18	m
	30 to 60	15 to 70	m
Beam diameter	33	23	mm
Power consumption	115/230 V AC	7/10	VA
	24 V DC	3/5	W

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

11 Selection Table

Voltage	Scanning range	Termination type	Sender unit		Receiver unit		
			Type	Part no.	Type	Part no.	
230 V AC	0.5 to 18 m	PG	WSU 26/2-110	1 015 615	WEU 26/2-110	1 015 616	
		Plug	WSU 26/2-111	1 015 712	WEU 26/2-111	1 015 713	
		Plug *)	WSU 26/2-113	1 015 716	WEU 26/2-113	1 015 715	
		Plug *)			WEU 26/2-112	1 015 714	
	15 to 70 m	Plug 15 P + E *)	WSU 26/2-114	1 015 834	WEU 26/2-114	1 015 835	
		PG	WSU 26/2-210	1 015 731	WEU 26/2-210	1 015 743	
		Plug	WSU 26/2-211	1 015 733	WEU 26/2-211	1 015 744	
		Plug *)	WSU 26/2-213	1 015 736	WEU 26/2-213	1 015 748	
		Plug *)			WEU 26/2-212	1 015 746	
		Plug 15 P + E *)	WSU 26/2-214	1 015 840	WEU 26/2-214	1 015 841	
	115 V AC	0,5 to 18 m	PG	WSU 26/2-120	1 015 717	WEU 26/2-120	1 015 718
			Plug	WSU 26/2-121	1 015 719	WEU 26/2-121	1 015 720
			Plug *)	WSU 26/2-123	1 015 723	WEU 26/2-123	1 015 722
			Plug *)			WEU 26/2-122	1 015 721
15 to 70 m		Plug 15 P + E *)	WSU 26/2-124	1 015 836	WEU 26/2-124	1 015 837	
		PG	WSU 26/2-220	1 015 738	WEU 26/2-220	1 015 749	
		Plug	WSU 26/2-221	1 015 740	WEU 26/2-221	1 015 750	
		Plug *)	WSU 26/2-223	1 015 737	WEU 26/2-223	1 015 505	
					WEU 26/2-222	1 015 751	
		Plug 15 P + E *)	WSU 26/2-224	1 015 842	WEU 26/2-224	1 015 843	
24 V DC	0,5 to 18 m	PG	WSU 26/2-130	1 015 724	WEU 26/2-130	1 015 725	
		Stecker	WSU 26/2-131	1 015 726	WEU 26/2-131	1 015 727	
		Stecker *)	WSU 26/2-133	1 015 730	WEU 26/2-133	1 015 729	
		Stecker *)	WSU 26/2-231	1 015 747	WEU 26/2-231	1 015 753	
		Plug *)	WSU 26/2-233	1 015 739	WEU 26/2-233	1 015 755	
		Plug *)			WEU 26/2-232	1 015 754	
		Plug 15 P + E *)	WSU 26/2-234	1 015 844	WEU 26/2-234	1 015 845	

*) See electrical wiring diagram



WARNING

Selection of plug variant WSU/WEU

Since 1989 VDE 0160 05/88 and VDE 0110 have stipulated doubled clearance and creepage distances. In the following cases the necessary clearance and creepage distance of the 6 PE Hirschmann connecting plug on the WEU are not met:

Supply voltage WEU	Voltage at WEU output relays	Remarks
230 V AC	230 V AC	Only in case of separated circuits/phases
230 V AC	24 V DC	–
24 V DC	230 V AC	–

In order to meet the VDE requirements for clearance and creepage distances in these cases, the square 15-pin + PE plug must be used.

11.1 Conversion list

WSU to be replaced	New type 26/2			
	Scanning range 0.5 to 18 m		Scanning range 15 to 70 m	
WSU 26-110	WSU 26/2-110	1 015 615	WSU 26/2-210	1 015 731
WSU 26-111	WSU 26/2-111	1 015 712	WSU 26/2-211	1 015 733
WSU 26-112	WSU 26/2-113	1 015 716	WSU 26/2-213	1 015 736
WSU 26-120	WSU 26/2-120	1 015 717	WSU 26/2-220	1 015 738
WSU 26-121	WSU 26/2-121	1 015 719	WSU 26/2-221	1 015 740
WSU 26-130	WSU 26/2-130	1 015 724	WSU 26/2-230	1 015 745
WSU 26-131	WSU 26/2-131	1 015 726	WSU 26/2-231	1 015 747
WSU 26-132	WSU 26/2-133	1 015 730	WSU 26/2-233	1 015 739
WSU 26-210			WSU 26/2-210	1 015 731
WSU 26-211			WSU 26/2-211	1 015 733
WSU 26-212			WSU 26/2-213	1 015 736
WSU 26-220			WSU 26/2-220	1 015 738
WSU 26-221			WSU 26/2-221	1 015 740
WSU 26-230			WSU 26/2-230	1 015 745
WSU 26-231			WSU 26/2-231	1 015 747
WSU 26-232			WSU 26/2-233	1 015 739

WEU to be replaced	New type 26/2			
	Scanning range 0.5 to 18 m		Scanning range 15 to 70 m	
WEU 26-710	WEU 26/2-110	1 015 616	WEU 26/2-210	1 015 743
WEU 26-712	WEU 26/2-112	1 015 713	WEU 26/2-211	1 015 744
WEU 26-713	WEU 26/2-113	1 015 715	WEU 26/2-213	1 015 748
WEU 26-720	WEU 26/2-120	1 015 718	WEU 26/2-220	1 015 749
WEU 26-730	WEU 26/2-130	1 015 725	WEU 26/2-230	1 015 504
WEU 26-731	WEU 26/2-131	1 015 727	WEU 26/2-231	1 015 753
WEU 26-732	WEU 26/2-132	1 015 728	WEU 26/2-232	1 015 754
WEU 26-733	WEU 26/2-133	1 015 729	WEU 26/2-233	1 015 755

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

12 Selection Table Accessories

Description	Part no.
Alignment aid AR 60, complete	1 015 741
Adapter for alignment aid AR 60	4 031 156
Mounting bracket for WSU/WEU	2 007 900
Corner mirror PSK 1, for scanning range 0.5 to 18 m	1 005 229
Mounting set for PSK 1	2 012 473
Hinged bracket for corner mirror PSK 1 (1 piece)	2 009 292
Corner mirror PNS 105-1, for scanning range 15 to 70 m	1 004 076
Corner mirror PSK 45	5 306 053
Cable receptacle, straight, 6 + PE (plastic)	6 006 612
Cable receptacle, angled (plastic)	6 006 613
Cable receptacle 15 P + E, lateral cable outlet, PG 16	2 019 076
Cable receptacle 15 P + E, lateral cable outlet, PG 13.5	2 019 075
Spark-suppression element RC-A 0,22 μ F + 220 Ω (115 to 230 V)	6 001 224
Spark-suppression element RC-AD 2,2 μ F + 100 Ω (24 V)	6 001 225
Switching amplifier LCU-X 24 V DC	1 013 410
PG-cable gland PG 21 for use of 2 cables with PNOZ 8	5 305 978
PG extension PG 13.5 to PG 21 for use of 2 cables with PNOZ 8	5 306 052
Dust shield	1 003 556
Snow shield	1 003 619

13 Checklist

SICK

Checklist for machine manufacturer/installer for the installation of Electro Sensitive Protective Equipment (ESPE)

Dependent upon the application, the checks listed below are a minimum when placing an ESPE into operation for the first time.

For reference purposes the list should be retained or stored with the machine documents.

1. Are the relevant safety standards incorporated into the machine build?
Will they satisfy the Regulations? Yes No
2. Are the standards listed in the Declaration of Conformity? Yes No
3. Is the ESPE the correct type and interfaced to the correct category? Yes No
4. Is access to the danger zone/point of danger only possible through the ESPE? Yes No
5. Are measures in place to prevent standing between the ESPE and the danger zone? If so, are these measures secured against removal? Yes No
6. Has the overall machine stopping time been checked and documented? Yes No
7. Is the resultant safety distance observed between the danger point and the ESPE? Yes No
8. Is the ESPE correctly fixed and secured against movement after setting in its fixed position? Yes No
9. Are the required protection measures against electric shock in place? Yes No
10. Is the re-set/re-start switch for the ESPE installed and fitted to the correct standard? Yes No
11. Are the OSSDs of the ESPE connected in accordance with the machine circuit diagram? Yes No
12. Have the protective functions been inspected in accordance with the inspection instructions of this document? Yes No
13. Are the protective functions effective in every setting of the operating mode switch? Yes No
14. Are the switching elements controlled by the ESPE, e. g. contactors, valves monitored? Yes No
15. Is the ESPE effective during the entire hazardous state? Yes No
16. Is the hazardous state ended when the ESPE is switched on or off, as well as upon changing operation modes or on switching over to another protective device? Yes No
17. Is the Daily Check Requirement sign positioned in a place visible to the operator? Yes No

This checklist does not replace the initial commissioning of regular inspections by qualified personnel.

WSU 26/2 – WEU 26/2

Photoelectric Safety Switch

Your contacts:

Australia

Phone +61 3 94 97 41 00
008 33 48 02 – toll free
Fax +61 3 94 97 11 87

Austria

Phone +43 2 23 66 22 88-0
Fax +43 2 23 66 22 88-5

Belgium/Luxembourg

Phone +32 24 66 55 66
Fax +32 24 63 31 04

Brazil

Phone +55 11 55 61 26 83
Fax +55 11 55 35 41 53

China/Hong Kong

Phone +8 52 27 63 69 66
Fax +8 52 27 63 63 11

Czech Republik

Phone +42 02 578 10 561
Fax +42 02 578 10 559

Denmark

Phone +45 45 82 64 00
Fax +45 45 82 64 01

Finland

Phone +3 58 9-728 85 00
Fax +3 58 9-72 88 50 55

France

Phone +33 1 64 62 35 00
Fax +33 1 64 62 35 77

Germany

Phone +49 2 11 53 01 0
Fax +49 2 11 53 01 100

Great Britain

Phone +44 17 27-83 11 21
Fax +44 17 27-85 67 67

Italy

Phone +39 02 92 14 20 62
Fax +39 02 92 14 20 67

Japan

Phone +813 33 58 13 41
Fax +813 33 58 05 86

Netherlands

Phone +31 30 229 25 44
Fax +31 30 229 39 94

Norway

Phone +47 67 56 7500
Fax +47 67 56 6610

Poland

Phone +48 22 8 37 40 50
Fax +48 22 8 37 43 88

Singapore

Phone +65 7 44 37 32
Fax +65 8 41 77 47

Spain

Phone +34 93 4 80 31 00
Fax +34 93 4 73 44 69

Sweden

Phone +46 8 6 80 64 50
Fax +46 8 7 10 18 75

Switzerland

Phone +41 4 16 19 29 39
Fax +41 4 16 19 29 21

Taiwan

Phone +88 62 23 65 62 92
Fax +88 62 23 68 73 97

USA

Phone +1 (952) 9 41-67 80
Fax +1 (952) 9 41-92 87

Representatives and agencies
in all major industrial nations.

