

**PRK 46B Ex n**

**Retro-reflective photoelectric sensors with polarisation filter**

Part No. 501 09200

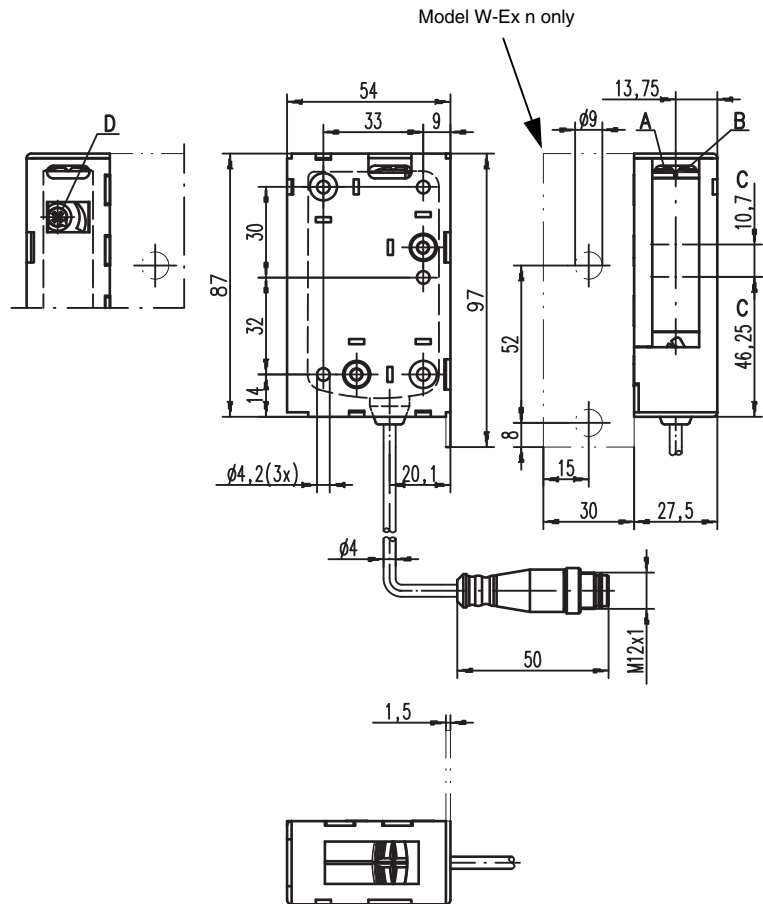


**0.05 ... 18 m**



- Polarised retro-reflective photoelectric sensor
- Fast alignment through *brightVision*®
- Fast connection through Ultra-Lock™ fast locking
- A²LS - Active Ambient Light Suppression
- Push-pull switching outputs
- Relay output - for operation without reference potential
- Operating range adjustment
- Warning output - for increased availability
- Ex II 3G EEx nA II T4
- Ex II 3D tD A22 IP 67 T 90°C

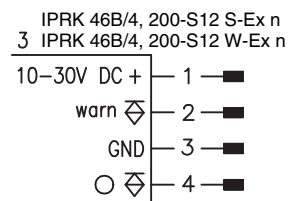
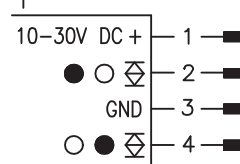
**Dimensioned drawing**



- A** Green indicator diode
- B** Yellow indicator diode
- C** Optical axis
- D** Optional operating range adjustment

**Electrical connection**

- PRK 46B/66, 200-S12 S-Ex n
- PRK 46B/66, 200-S12 W-Ex n
- PRK 46B/66.01, 200-S12 S-Ex n
- PRK 46B/66.01, 200-S12 W-Ex n



We reserve the right to make changes • 46B\_Ex\_b10gb.fm



**Accessories:**

(available separately)

- Mounting systems (BT 46, BT 46.1, BT 46.1.5, BT 46.2)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Reflectors
- Reflective tapes
- Interlocking guard K-VM12-Ex (Part No. 501 09217)

## Specifications

### Optical data

Typ. op. range limit (TK(S) 100x100) <sup>1)</sup>	0.05 ... 18m
Operating range <sup>2)</sup>	see tables
Light source <sup>3)</sup>	LED (modulated light)
Wavelength	620nm (visible red light, polarised)

### Timing

Switching frequency	transistor: 500Hz, relay: 20Hz
Response time	transistor: 1 ms, relay: 25ms
Delay before start-up	≤ 300ms

### Electrical data

#### With transistor switching outputs

Operating voltage $U_B$ <sup>4)</sup>	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of $U_B$
Open-circuit current	≤ 20mA
Switching output	2 push-pull switching outputs <sup>5)</sup>
	pin 2: PNP dark switching, NPN light switching
	pin 4: PNP light switching, NPN dark switching
	push-pull switching output <sup>5)</sup>
	pin 4: PNP light switching, NPN dark switching
	2 PNP switching outputs, pin 2: PNP dark switching,
	pin 4: PNP light switching
	PNP switching output, pin 4: light switching
	≥ ( $U_B - 2V$ ) / ≤ 2V
	max. 100mA

Signal voltage high/low  
Output current

#### With relay switching output

Operating voltage $U_B$	24VDC ±10%
Open-circuit current	≤ 30mA
Switching output.../7D ...	relay, make-contact between pin 2 and pin 4, dark switching <sup>6)</sup>
	30VAC/DC / max. 200mA
	6VA, cos φ = 1
	adjustable, 270° (PRK 46B/66.01... only)

Switching voltage/switching current  
Switching power  
Operating range

### Indicators

Green LED	ready
Yellow LED	light path free
Flashing yellow LED	light path free, no performance reserve

### Mechanical data

Housing <sup>7)</sup>	plastic (PC-ABS)
Optics cover	plastic (PMMA)
Weight (with connector/with cable and conn.)	50g/65g
Connection type	Cable with M12 connector, cable length: 200mm

### Environmental data

Ambient temp. (operation/storage)	-30°C ... +60°C / -30°C ... +70°C
Protective circuit <sup>8)</sup>	2, 3
VDE safety class <sup>9)</sup>	II, all-insulated
Protection class	IP 67, IP 69K
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2
Certifications	UL 508 <sup>4)</sup>

### Explosion protection

Labelling (CENELEC)	⊕ II 3G EEx nA II T4	⊕ II 3D Ex tD A22 IP 67 T 90°C
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### Options

<b>Warning output autoControl</b>	PNP transistor, counting principle
Signal voltage high/low	≥ ( $U_B - 2V$ ) / ≤ 2V
Output current	max. 100mA

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) Average life expectancy 100,000 h at an ambient temperature of 25°C
- 4) For UL applications: for use in class 2 circuits only
- 5) The push-pull switching outputs must not be connected in parallel
- 6) Suitable spark extinction must be provided with inductive or capacitive loads
- 7) Model "S"=standard housing, model "W"= with lateral flange
- 8) 2=polarity reversal protection, 3=short-circuit protection for all transistor outputs
- 9) Rating voltage 50VAC

## Order guide

Cable with M12 connector, length: 200mm	Designation	Part No.
<b>Complementary switching output + operating range adjustment</b>		
Housing model S (standard)	PRK 46B/66.01, 200-S12 S-Ex n	501 08593
Housing model W (lateral flange)	PRK 46B/66.01, 200-S12 W-Ex n	501 08594
<b>Complementary switching output</b>		
Housing model S (standard)	PRK 46B/66, 200-S12 S-Ex n	501 08591
Housing model W (lateral flange)	PRK 46B/66, 200-S12 W-Ex n	501 08592
<b>PNP switching output light switching, warning output</b>		
Housing model S (standard)	IPRK 46B/4, 200-S12 S-Ex n	501 08945
Housing model W (lateral flange)	IPRK 46B/4, 200-S12 W-Ex n	501 08946

PRK 46B/66... S/W-Ex n - 02  
IPRK 46B/4... S/W-Ex n - 02

## Tables

Reflectors	Operating range
1 TK(S) 100x100	0.05 ... 15m
2 TK 82.2	0.25 ... 11m
3 TK(S) 50x50	0.05 ... 10m
4 TK(S) 40x60	0.05 ... 8m
5 TK(S) 20x40	0.05 ... 3m
6 Tape 4 50x50	0.2 ... 2m

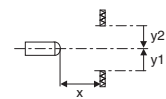
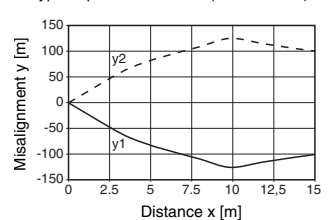
1	0,05	15	18
2	0,25	11	14
3	0,05	10	12
4	0,05	8	10
5	0,05	3	5
6	0,2	2	3

□ Operating range [m]  
▒ Typ. operating range limit [m]

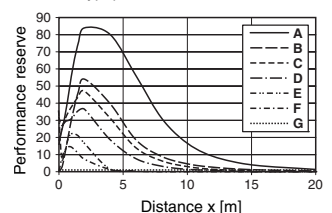
TK ... = adhesive  
TKS ... = screw type  
Tape 4 = adhesive

## Diagrams

Typ. response behaviour (TK 100x100)



Typ. performance reserve



- A TK 100x100
- B TK 82.2
- C TK 50x50
- D TKS 40x60
- E TKS 20x40
- F Tape 4 50x50
- G Switching point

## Remarks

- **Approved purpose:**  
The photoelectric sensors are optical electronic sensors for optical, contactless detection of objects.

## Ex devices

### Operating instructions for sensors for use in potentially explosive areas of Group II, Category 3, Zones 2 ("Gas Ex") and 22 ("Dust Ex")

The sensors produced by Leuze electronic GmbH + Co. KG for use in potentially explosive areas are sensors which function on the optical electronic principle. Without making physical contact, these sensors detect objects which are located in or which pass through the light beam.



#### Attention!

Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly and under unfavourable conditions in potentially explosive areas.

A safe operation in potentially explosive areas is only possible if the equipment is used properly and for its intended purpose.

This requires that the installation and operating instructions are adhered to and that appropriate measures are taken to ensure that this is effectively and permanently ensured.



#### Notes!

- In order to achieve a safe operation of sensors of Group II, Category 3, in potentially explosive areas, installation and protective devices appropriate to the application must ensure that operational events do not damage or overload the equipment.

### Installation, Commissioning

In order to comply with the requirements acc. to EN 50 281-1-1 and EN 60 079-15, the following prerequisites must be met:

- Devices with connector (e.g. Series 46B) must be equipped with an additional safeguard or a mechanical Interlocking guard K-VM12-Ex (Part No. 501 09217) to avoid unintended separation of the connectors. The warning sign "Do not disconnect under voltage" that is supplied with the device must be attached to the sensor or its mounting bracket so that it is clearly visible.
- Devices with terminal compartment lid (e.g. Series 96) must only be commissioned if the terminal compartment lid of the device is properly sealed.
- Connection cables and connectors must be protected from excessive or unintended pulling or pushing strain.
- The requirements according to EN 50281-1-2 regarding dust deposits and temperatures must be observed.



#### Attention!

- Due to the physical circumstances, the sensors must not be used for the protection of persons or for purposes of emergency shutdown.
- The sensors must only be installed and maintained by trained electricians.
- The applicable regulations for the installation of electrical equipment in potentially explosive areas must be observed.

### Maintenance

No changes may be made to the sensors for potentially explosive areas.

Repairs to the sensors may only be performed by persons trained for such work or by the manufacturer. Defective devices must be replaced immediately.

Cyclical maintenance of the sensors is not necessary.

Depending on the environmental conditions, it may occasionally be necessary to clean the optical surface of the sensors. This cleaning must only be performed by appropriately trained persons. We recommend using a soft, damp cloth for this purpose. Cleaning agents that contain solvents must not be used!

### Chemical resistance

The sensors demonstrate good resistance against many diluted acids and bases.

Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.

Resistance to chemicals should be examined on a case by case basis.

## EG-Konformitätserklärung

## EC Declaration of Conformity

Name des Herstellers:

Name of the manufacturer

**Leuze electronic GmbH+Co. KG**

Anschrift:

Address:

**In der Braike 1 D-73277 Owen/ Teck**erklärt unter alleiniger Verantwortung,  
dass das Produkt:declares under sole responsibility that the  
products:

Bezeichnung/ Designation:

Bestellnummer/ Order Number:

**PRK 46B/66,200-S12 S-Ex n**  
**PRK 46B/66,200-S12 W-Ex n**  
**PRK 46B/66.01,200-S12 S-Ex n**  
**PRK 46B/66.01,200-S12 W-Ex n**  
**IPRK 46B/4,200-S12 S-Ex n**  
**IPRK 46B/4,200-S12 W-Exn**

**50108591**  
**50108592**  
**50108593**  
**50108594**  
**50108945**  
**50108946**

Kennzeichnung Gas:

Marking for gas:

 **II 3G EEx nA II T4**

Kennzeichnung Staub:

Marking for dust:

 **II 3D Ex tD A22 IP67 T90°C**

folgenden Richtlinien und Normen für die  
Gerätegruppe II, Gerätekategorie 3 entsprechen  
und bei bestimmungsgemäßer Verwendung und  
Beachtung der Betriebsanleitung die  
grundlegenden Sicherheits- und  
Gesundheitsanforderungen erfüllen.

conform to the following directives and standards  
for equipment group II, equipment category 3.  
They fulfill the basic health and safety  
requirements if used as intended and in  
accordance with the operating manual.

Richtlinie 94/9/EG  
Richtlinie 89/336/EWG

Directive 94/9/EC  
Directive 89/336/EEC

EN 60947-5-2 1998+A1: 1999  
EN 60825-1: 1994+A1: 2002+A2: 2001  
EN 60079-15: 2005  
EN 50281-1-1: 1998+A1: 2002  
DMT 02 ATEX ZQS/ E 166

Owen, den

  
Dr. Harald Grübel

(Geschäftsführer/ General Manager)