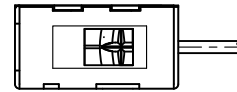
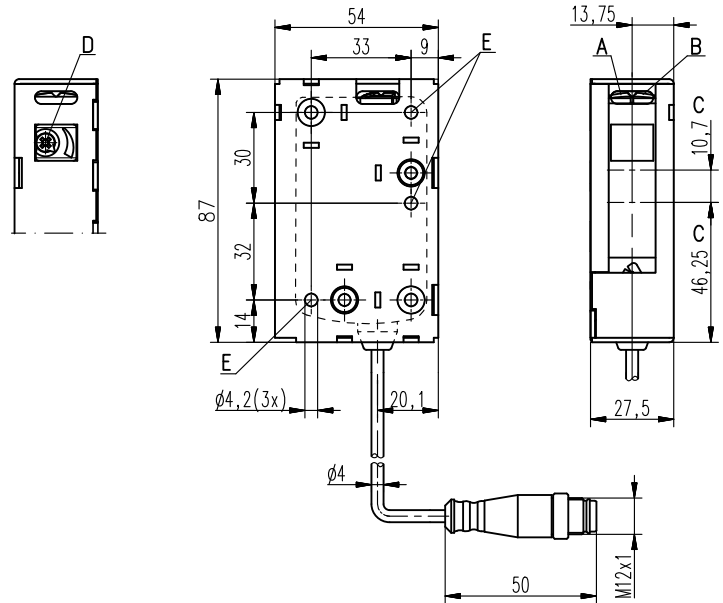


**PRK 46B Ex n Retro-reflective photoelectric sensors with polarization filter**

en 04-2013/05 50109200-01



**Dimensioned drawing**

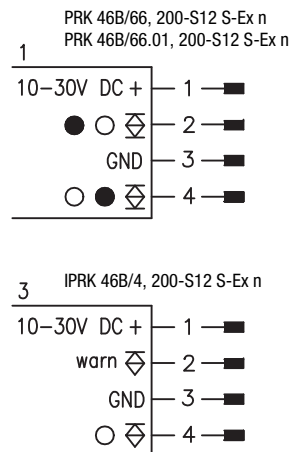


- A** Green indicator diode
- B** Yellow indicator diode
- C** Optical axis
- D** Optional operating range adjustment
- E** Fastening hole

**0.05 ... 18m**

- Polarized 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 Ex nA op is IIB T4 Gc X
- Ex II 3D Ex tc IIIC T90°C Dc IP67 X

**Electrical connection**



**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)

We reserve the right to make changes • DS\_PRK46BEx\_en\_50109200-01.fm



## 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, polarized)

### 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 .../66. ... 2 push-pull switching outputs <sup>5)</sup>  
 .../6. ... pin 2: PNP dark switching, NPN light switching  
 .../44. ... pin 4: PNP light switching, NPN dark switching  
 .../4. ... 2 PNP switching outputs, pin 2: PNP dark switching,  
 PNP light switching  
 PNP switching output, pin 4: light switching  
 $\geq (U_B - 2V) / \leq 2V$   
 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>  
 Switching voltage/switching current 30VAC/DC / max. 200mA  
 Switching power 6VA, cos φ = 1  
 Operating range adjustable, 270° (PRK 46B/66.01... only)

### Indicators

Green LED ready  
 Yellow LED light path free  
 Yellow LED, flashing 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 (in accordance with EN 60825-1)  
 Standards applied IEC 60947-5-2  
 Certifications UL 508 <sup>4)</sup>

### Explosion protection

Certification (CENELEC)  $\text{Ex}$  II 3G Ex nA op is IIB T4 Gc X  
 $\text{Ex}$  II 3D Ex tc IIIC T90°C Dc IP67 X

### Options

#### Warning output autoControl

Signal voltage high/low PNP transistor, counting principle  
 Output current  $\geq (U_B - 2V) / \leq 2V$   
 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
<b>Complementary switching output</b>		
Housing model S (standard)	PRK 46B/66, 200-S12 S-Ex n	501 08591
<b>PNP switching output light switching, warning output</b>		
Housing model S (standard)	IPRK 46B/4, 200-S12 S-Ex n	501 08945

PRK 46B/66... S-Ex n - 04  
 IPRK 46B/4... S-Ex n - 04

## Tables

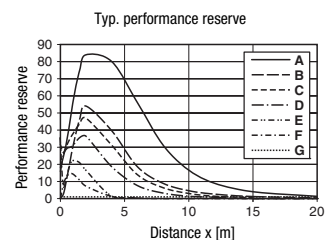
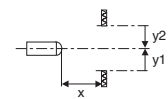
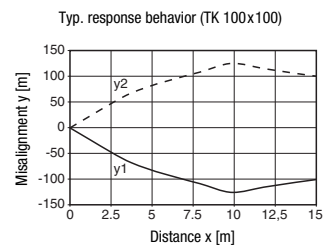
Reflectors	Operating range
1 TK(S) 100x100	0.05 ... 15m
2 TK 82.2	0.25 ... 11m
3 TK(S) 50x50	0.05 ... 10m
4 TK(S) 40x60	0.05 ... 8m
5 TK(S) 20x40	0.05 ... 3m
6 Tape 4 50x50	0.2 ... 2m

1 0.05	15	18
2 0.25	11	14
3 0.05	10	1
4 0.05	8	1
5 0.05	3	5
6 0.2	2	3

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

TK ... = adhesive  
 TK(S) ... = screw type  
 Tape 4 = adhesive

## Diagrams



- 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:**  
 This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.

## Ex devices

### Notices for the safe use of sensors in potentially explosive areas

This document is valid for devices with the following classifications:

Device group	Device category	Equipment protection level	Zone
II	3G	Gc	Zone 2
II	3D	Dc	Zone 22



#### Attention!

- Check whether the equipment classification corresponds to the requirements of the application.
- The devices are not suited for the protection of persons and may not be used for emergency shutdown purposes.
- A safe operation is only possible if the equipment is used properly and for its intended purpose.
- Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly or under unfavorable conditions in potentially explosive areas.
- The applicable national regulations (e.g. EN 60079-14) for the configuration and installation of explosion-proof systems must be observed without fail.

#### Installation and Commissioning

- The devices must only be installed and commissioned by trained electricians. They must be aware of the regulations and operation of explosion-proof equipment.
- To prevent unintentional separation under voltage, devices with connector (e.g. Series 46B) must be equipped with a safeguard or a mechanical interlocking guard (e.g. K-VM12-Ex, part no. 50109217). 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.
- Prevent dust deposits from forming on the devices.
- Metallic parts (e.g. housing, mounting devices) are to be integrated into the potential equalization to prevent electrostatic charge.

#### Maintenance

- No changes may be made to explosion-proof devices.
- Repairs may only be performed by a person trained for such work or by the manufacturer.
- Defective devices must be replaced immediately.
- Cyclical maintenance is generally not necessary.
- Depending on the environmental conditions, it may occasionally be necessary to clean the optical surfaces of the sensors. This cleaning must only be performed by persons trained for this task. We recommend using a soft, damp cloth. Cleaning agents that contain solvents must not be used.

#### Chemical resistance

- The sensors demonstrate good resistance against diluted (weak) acids and bases.
- Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.
- Resistance to chemicals must be examined on a case by case basis.

#### Special conditions

- The devices must be installed in such a way that they are protected from direct exposure to UV rays (sunlight).
- Static charge on plastic surfaces must be avoided.



the **sensor** people

**EG-KONFORMITÄTS-  
ERKLÄRUNG**

**EC DECLARATION  
OF CONFORMITY**

**DECLARATION CE  
DE CONFORMITE**

Der Hersteller

The Manufacturer

Le constructeur

**Leuze electronic GmbH + Co. KG**  
In der Braike 1, PO Box 1111  
73277 Owen, Germany

erklärt, dass die nachfolgend aufgeführten Produkte den einschlägigen Anforderungen der genannten EG-Richtlinien und Normen entsprechen.

declares that the following listed products fulfil the relevant provisions of the mentioned EC Directives and standards.

déclare que les produits identifiés suivants sont conformes aux directives CE et normes mentionnées.

Produktbeschreibung:

Description of product:

Description de produit:

**Reflexions-Lichtschranken mit  
Polarisationsfilter (I)PRK  
46B/...S-Ex n**


**Retro-reflective photoelectric  
sensor with polarization filter  
(I)PRK 46B/... S-Ex n**

**Reflex sur réflecteur avec filtre  
polarisant  
(I)PRK 46B/... S-Ex n**

Kennzeichnung Gas / Staub:

Marking for gas / dust:

Marquage gaz / poussière:

 II 3G Ex nA op is IIB T4 Gc X

 II 3D Ex tc IIIC T90° C Dc IP67 X

Angewandte EG-Richtlinie(n):

Applied EC Directive(s):

Directive(s) CE appliquées:

**94/9/EG  
2004/108/EG**

**94/9/EC  
2004/108/EC**

**94/9/CE  
2004/108/CE**

Angewandte Normen:

Applied standards:

Normes appliquées:

**EN 60079-0: 2009  
EN 60079-28: 2007  
EN 60947-5-2: 2007**

**EN 60079-15: 2005  
EN 60079-31: 2009**

22.3.2013

Datum / Date / Date



Ulrich Balbach, Geschäftsführer / Director / Directeur

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LEO-ZQM-149-02-FO

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Persönlich haftende Gesellschafterin Leuze electronic Geschäftsführungs-GmbH,  
Sitz Owen, Registergericht Stuttgart, HRB 230550  
Geschäftsführer: Ulrich Balbach, Dr. Matthias Kirchherr  
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