



## Specifications

### Optical data

Typ. scanning range limit (white 90%)<sup>1)</sup>  
 Scanning range<sup>2)</sup>  
 Adjustment range  
 Light source<sup>3)</sup>  
 Wavelength

### Infrared light

0 ... 2,500mm  
 see tables  
 120 ... 2,500mm  
 LED (modulated light)  
 850nm

### Timing

Switching frequency  
 Response time  
 Delay before start-up

transistor: 200Hz, relay: 20Hz  
 transistor: 2.5ms, relay: 25ms  
 ≤ 100ms

### Electrical data

#### With transistor switching outputs

Operating voltage  $U_B$ <sup>4)</sup>  
 Residual ripple  
 Open-circuit current  
 Switching output

10 ... 30VDC (incl. residual ripple)  
 ≤ 15% of  $U_B$   
 ≤ 30mA  
 2 push-pull switching outputs<sup>5)</sup>  
 pin 2: PNP dark switching, NPN light switching  
 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: PNP light switching  
 PNP switching output, pin 4: PNP dark switching

Signal voltage high/low  
 Output current

≥ ( $U_B - 2V$ ) / ≤ 2V  
 max. 100mA

#### With relay switching output

Operating voltage  $U_B$ <sup>4)</sup>  
 Open-circuit current  
 Switching output  
 Switching voltage  
 Switching power

24VDC ± 10%  
 ≤ 40mA  
 relay, make-contact between pin 2 and pin 4, light switching<sup>6)</sup>  
 30VAC/DC, max. 200mA  
 max. 6VA, cos φ = 1

### Indicators

Green LED  
 Yellow LED  
 Flashing yellow LED

ready  
 reflection  
 reflection, no performance reserve

### Mechanical data

Housing<sup>7)</sup>/ optics cover  
 Weight  
 Connection type

plastic / plastic  
 50g (with connector) / 65g (with cable and conn.)  
 Cable with M12 connector, cable length: 200mm

### Environmental data

Ambient temp. (operation/storage)  
 Protective circuit<sup>8)</sup>  
 VDE safety class<sup>9)</sup>  
 Protection class  
 LED class  
 Standards applied

-30°C ... +60°C / -30°C ... +70°C  
 2, 3  
 II, all-insulated  
 IP 67, IP 69K  
 1 (acc. to EN 60825-1)  
 IEC 60947-5-2

### Explosion protection

Labelling (CENELEC)

⊕ II 3G EEx nA II T4      ⊕ II 3D Ex tD A22 IP 67 T 90°C

### Options

Warning output autoControl warn  
 Signal voltage high/low  
 Output current

PNP transistor, counting principle  
 ≥ ( $U_B - 2V$ ) / ≤ 2V  
 max. 100mA

- 1) Typ. scan. range limit: max. achievable scanning range for light objects (white 90%)
- 2) Scanning range: recommended scanning range for objects with different diffuse reflection
- 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 outputs
- 9) Rating voltage 50VAC

## Order guide

Connection diagram no. Designation



Part No.

### Cable with M12 connector, length: 200mm

#### Complementary push-pull switching output

Housing model S (standard)      1    HRT 46B/66, 200-S12 S-Ex n    501 08587  
 Housing model W (lateral flange)    1    HRT 46B/66, 200-S12 W-Ex n    501 08588

#### PNP switching output light switching, warning output

Housing model S (standard)      3    IHRT 46B/4, 200-S12 S-Ex n    501 08943  
 Housing model W (lateral flange)    3    IHRT 46B/4, 200-S12 W-Ex n    501 08944

HRT 46B/66, 200-S12 S/W-Ex n - 02  
 IHRT 46B/4, 200-S12 S/W-Ex n - 02

## Tables

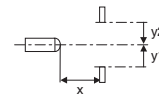
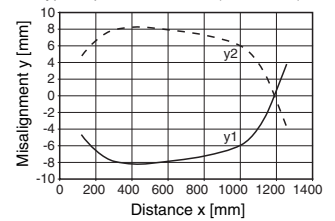
1	0	2.500
2	5	1.800
3	10	1.200

1	white 90%
2	grey 18%
3	black 6%

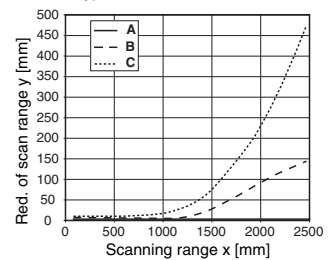
Scanning range [mm]

## Diagrams

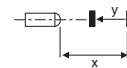
Typ. response behaviour (white 90%)



Typ. black/white behaviour



A white 90%  
 B grey 18%  
 C black 6%



## Remarks

- **Approved purpose:**  
 The light scanners are optical electronic sensors for optical, contactless detection of objects.
- With the set scanning range, a tolerance of the upper scanning range limit is possible depending on the reflection properties of the material surface.

## 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:

**HRTR 46B/66,200-S12 S-Ex n**  
**HRTR 46B/66,200-S12 W-Ex n**  
**HRT 46B/66,200-S12 S-Ex n**  
**HRT 46B/66,200-S12 W-Ex n**  
**IHRT 46B/4,200-S12 S-Ex n**  
**IHRT 46B/4,200-S12 W-Ex n****50108589**  
**50108590**  
**50108587**  
**50108588**  
**50108943**  
**50108944**

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 fulfil the basic health and safety  
requirements if used as intended and in  
accordance with the operating manual.Richtlinie 94/9/EG  
Richtlinie 89/336/EWGDirective 94/9/EC  
Directive 89/336/EECEN 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

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Dr. Harald Grübel

(Geschäftsführer/ General Manager)