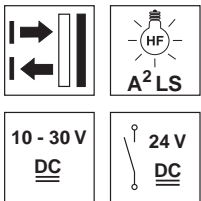


## HRT 46B

## Diffuse reflection light scanner with background suppression

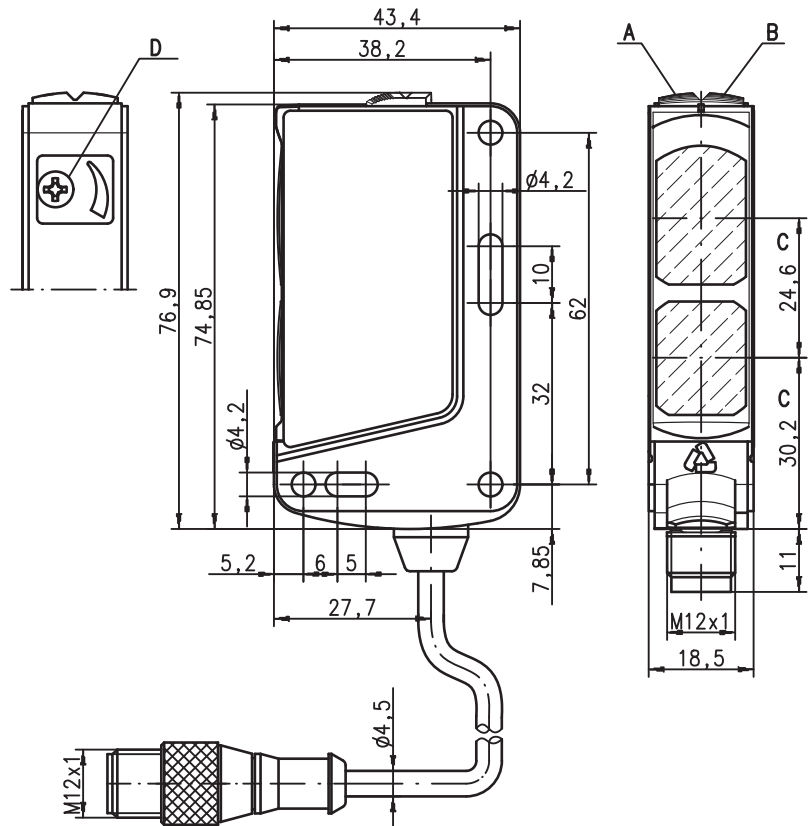
en 06-2010/01 50107354-01



**0 ... 2,500mm**  
1,200mm with  
black-white error < 10%

- Adjustable scanner with background suppression
- Reliable detection of light and dark, as well as inclined or sloped surfaces
- Exact scanning range adjustment through multiturn potentiometer
- Complementary switching outputs for optimal adaptation to the application
- Warning output - for increased availability
- A²LS - Active Ambient Light Suppression

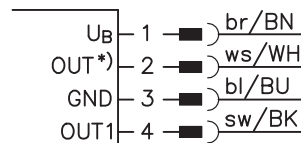
### Dimensioned drawing



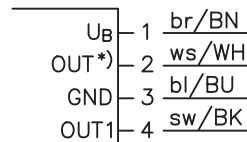
- A** Green indicator diode
- B** Yellow indicator diode
- C** Optical axis
- D** Scanning range adjustment

### Electrical connection

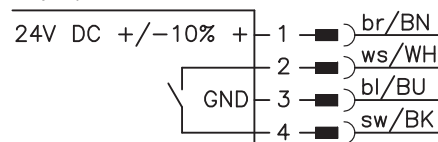
Connector, 4-pin



Cable

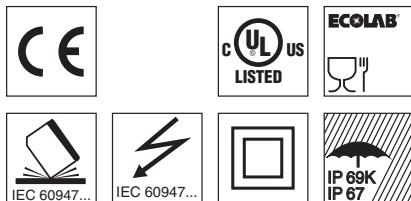


Relay output



Selection pin 2

*)	OUT
	OUT 2
	warn
	NC



### 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 ...)

We reserve the right to make changes • DS\_HRT\_46B\_en.fm

## 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> 10 ... 30VDC (incl. residual ripple)  
 Residual ripple ≤ 15% of  $U_B$   
 Open-circuit current ≤ 30mA  
 Switching output .../66. ... 2 push-pull switching outputs<sup>5)</sup>  
 pin 2: PNP dark switching, NPN light switching  
 pin 4: PNP light switching, NPN dark switching  
 .../44. ... 2 PNP switching outputs  
 pin 2: PNP dark switching, pin 4: PNP light switching  
 .../4. ... PNP switching output, pin 4: PNP light switching  
 .../4D. ... PNP switching output, pin 4: PNP dark switching

Signal voltage high/low  
 Output current

$\geq (U_B - 2V) \leq 2V$   
 max. 100mA

#### With relay switching output

Operating voltage  $U_B$ <sup>4)</sup> 24VDC ± 10%  
 Open-circuit current ≤ 40mA  
 Switching output .../7. ... relay, make-contact between pin 2 and pin 4, light switching<sup>6)</sup>  
 Switching voltage 30VAC/DC, max. 200mA  
 Switching power max. 6VA,  $\cos \varphi = 1$

### Indicators

Green LED ready  
 Yellow LED reflection  
 Yellow LED, flashing reflection, no performance reserve

### Mechanical data

Housing / optics cover plastic / plastic  
 Weight 50g (with connector) / 65g (with cable and conn.)  
 Connection type M12 connector, or  
 cable with M12 connector, cable length: 200mm

### Environmental data

Ambient temp. (operation/storage) -40°C ... +60°C / -40°C ... +70°C  
 Protective circuit<sup>7)</sup> 2, 3  
 VDE safety class<sup>8)</sup> II, all-insulated  
 Protection class IP 67, IP 69K  
 LED class 1 (acc. to EN 60825-1)  
 Standards applied IEC 60947-5-2

### Options

**Warning output autoControl warn** PNP transistor, counting principle  
 Signal voltage high/low  $\geq (U_B - 2V) \leq 2V$   
 Output current 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) 2=polarity reversal protection, 3=short-circuit protection for all outputs
- 8) Rating voltage 50V

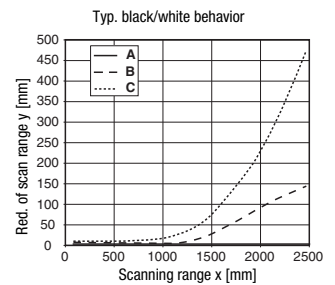
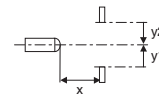
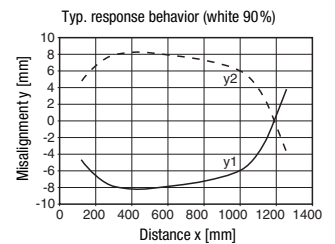
## Tables

1	0	2,500
2	5	1,800
3	10	1,200

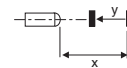
1	white 90%
2	grey 18%
3	black 6%

Scanning range [mm]

## Diagrams



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



## 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.
- With the set scanning range, a tolerance of the upper scanning range limit is possible depending on the reflection properties of the material surface.

## HRT 46B

## Diffuse reflection light scanner with background suppression

### Order guide

The sensors listed here are preferred types; current information at [www.leuze.com](http://www.leuze.com).

	Designation	Part No.
<b>With M12 connector</b>		
Complementary switching output	HRT 46B/66-S12	501 06547
Warning output, display low performance reserve	IHRT 46B/4-S12	501 06551
Warning output, display low performance reserve	IHRT 46B/4D-S12	501 06552
No contact with pin 2, direct connection to AS-interface I/O coupling modules possible	HRT 46B/4-S12	501 06549
No contact with pin 2, direct connection to AS-interface I/O coupling modules possible	HRT 46B/4D-S12	501 06550
Relay output, light switching	HRT 46B/7-S12	501 06562
<b>Cable with M12 connector</b>		
Complementary switching output	HRT 46B/66, 200-S12	501 06548

### Type key

I	H	R	T		4	6	B	/	4	D	-	6	0	0	F	,	2	0	0	-	S	1	2
---	---	---	---	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

#### Operating principle

<b>HRT</b>	Infrared-light scanner with background suppression
<b>IHRT</b>	Infrared-light scanner with background suppression and warning output

#### Series

<b>46B</b>	46B Series
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#### Switching output

<b>/66</b>	Complementary push-pull switching outputs
<b>/44</b>	Complementary PNP switching outputs
<b>/4</b>	Pin 4 PNP switching output, pin 2 no contact or warning output
<b>/6</b>	Pin 4 push-pull switching output, pin 2 no contact
<b>/7</b>	Relay, make-contact

#### Function characteristics

<b>N/A</b>	Pin 4 light switching; with push-pull, PNP light switching
<b>D</b>	Inverted switching logic

#### Special function

<b>.1</b>	Detection of objects between the rollers of a roller conveyor
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#### Product modifications

<b>-xxxx</b>	Scanning range in mm, only for preset sensors (only on request)
<b>F</b>	Permanent setting (only on request)

#### Electrical connection

<b>N/A</b>	Cable, standard length 2000 mm
<b>,200-S12</b>	Cable, length 200 mm with M12 connector
<b>-S12</b>	M12 connector

