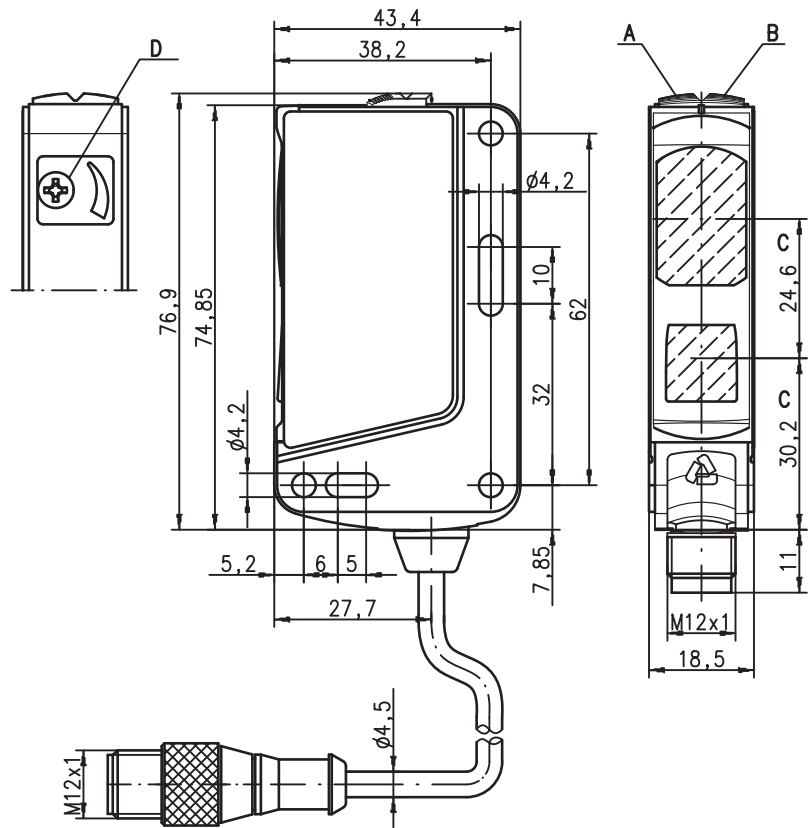


**HRTL 46B Laser diffuse reflection light scanner with background suppression**

en 07-2017/07 50107353-03



**Dimensioned drawing**



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

**50 ... 1,200mm**  
800mm with  
black-white error < 10%

**A<sup>2</sup>LS**

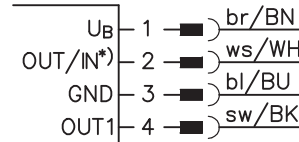
10 - 30 V  
**DC**

**CDRH**

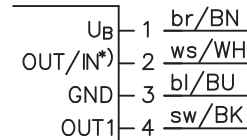
- Adjustable scanner with background suppression
- Exact positioning and detection of small parts by means of a laser beam
- Exact scanning range adjustment through multiturn potentiometer
- Fast alignment through *brightVision*<sup>®</sup>
- High switching frequency for detection of fast events
- A<sup>2</sup>LS - Active Ambient Light Suppression
- Complementary switching outputs for optimal adaptation to the application
- Activation for e.g. muting or test function

**Electrical connection**

Connector, 4-pin



Cable



Selection pin 2

*)	OUT	IN
	OUT 2	active

We reserve the right to make changes • PAL\_HRTL46B\_en\_50107353\_03.fm

**Accessories:**  
(available separately)

- Mounting systems (BT 46, BT 46.1, BT 46.1.5, BT 46.2)
- M12 connectors (KD ...)
- Ready-made cables (KD ...)

**Specifications**

<b>Optical data</b>		<b>Red light</b>
Typ. scanning range limit (white 90%) <sup>1)</sup>	50 ... 1,200mm	
Scanning range <sup>2)</sup>	see tables	
Adjustment range	120 ... 1,200mm	
Light source	laser (modulated light)	
Laser class	2 acc. to IEC 60825-1:2007	
Wavelength	655nm (visible red light)	
Maximum output power (peak)	2.2mW	
Pulse duration	≤ 13.8µs	
Light spot	approx. 3mm x 5mm at 1,000mm	
<b>Timing</b>		
Switching frequency	1,000Hz	
Response time	0.5ms	
Delay before start-up	≤ 100ms	
<b>Electrical data</b>		
Operating voltage $U_B$ <sup>3)</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>4)</sup> pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching push-pull switching output <sup>4)</sup> .../6. ... pin 4: PNP light switching, NPN dark switching	
Signal voltage high/low	≥ ( $U_B - 2V$ ) / ≤ 2V	
Output current	max. 100mA	
<b>Indicators</b>		
Green LED	ready	
Yellow LED	reflection	
Yellow LED, flashing	reflection, no performance reserve	
<b>Mechanical data</b>		
Housing	plastic	
Optics cover	plastic	
Weight	50g (with connector) / 65g (with cable and conn.)	
Connection type	M12 connector, or cable with M12 connector, cable length: 200mm	
<b>Environmental data</b>		
Ambient temp. (operation/storage)	-30°C ... +55°C <sup>5)</sup> / -40°C ... +70°C	
Protective circuit <sup>6)</sup>	2, 3	
VDE safety class <sup>7)</sup>	II, all-insulated	
Protection class	IP 67, IP 69K	
Standards applied	IEC 60947-5-2	
Certifications	UL 508, C22.2 No.14-13 <sup>3)</sup> 5) 8)	
<b>Options</b>		
<b>Activation input active</b>		
Transmitter active/not active	≥ 8V/≤ 2V	
Activation/disable delay	≤ 1ms/≤ 2ms	
Input resistance	10KΩ ± 10%	

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) For UL applications: for use in class 2 circuits only  
 4) The push-pull switching outputs must not be connected in parallel  
 5) UL certification for a temperature range of -10°C to +40°C  
 6) 2=polarity reversal protection, 3=short-circuit protection for all outputs  
 7) Rating voltage 50V  
 8) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

**Order guide**

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

	<b>Designation</b>	<b>Part No.</b>
<b>With M12 connector</b>		
Complementary switching output	HRTL 46B/66-S12	50106560
Activation input	HRTL 46B/6.8-S12	50110806
<b>Cable with M12 connector</b>		
Complementary switching output	HRTL 46B/66, 200-S12	50106561

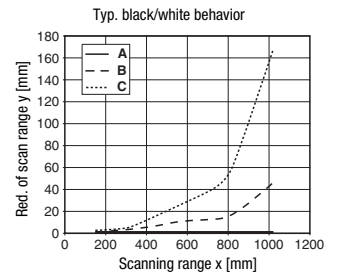
**Tables**

1	50	1,200
2	60	850
3	80	750

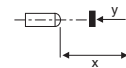
1	white 90%
2	grey 18%
3	black 6%

Scanning range [mm]

**Diagrams**



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



**Remarks**

**Operate in accordance with intended use!**

- ⚠ This product is not a safety sensor and is not intended as personnel protection.
- ⚠ The product may only be put into operation by competent persons.
- ⚠ Only use the product in accordance with the intended use.

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

**UL REQUIREMENTS**

Enclosure Type Rating: Type 1  
**For Use in NFPA 79 Applications only.**  
 Adapters providing field wiring means are available from the manufacturer. Refer to manufacturers information.  
**CAUTION** – the use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.  
**ATTENTION !** Si d'autres dispositifs d'alignement que ceux préconisés ici sont utilisés ou s'il est procédé autrement qu'indiqué, cela peut entraîner une exposition à des rayonnements et un danger pour les personnes.

# HRTL 46B Laser diffuse reflection light scanner with background suppression

## Type key

H R T L 4 6 B / 6 . 8 - S 1 2

### Operating principle

**HRTL** Scanner with background suppression with light visible red light

### Series

**46B** 46B Series

### Switching output

**/66** Complementary push-pull switching outputs

**/6** Pin 4 push-pull switching output, pin 2 no contact or activation input

### Function characteristics

**N/A** Pin 4 light switching; with push-pull, PNP light switching

**D** Inverted switching logic

### Special function

**.8** Activation input

### Product modifications

**-xxxx** Scanning range in mm, only for preset sensors (only on request)

**-xxxxF** Permanent setting (only on request)

### Electrical connection

**N/A** Cable, standard length 2000mm

**,200-S12** Cable, length 200 mm with M12 connector

**-S12** M12 connector

### Laser safety notices

**⚠ ATTENTION, LASER RADIATION – LASER CLASS 2**

**Never look directly into the beam!**

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product in **laser class 2** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24th, 2007.

- ↳ Never look directly into the laser beam or in the direction of reflecting laser beams!  
If you look into the beam path over a longer time period, there is a risk of injury to the retina.
- ↳ Do not point the laser beam of the device at persons!
- ↳ Intercept the laser beam with an opaque, non-reflective object if the laser beam is accidentally directed towards a person.
- ↳ When mounting and aligning the device, avoid reflections of the laser beam off reflective surfaces!
- ↳ **CAUTION!** Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous light exposure.
- ↳ Adhere to the applicable legal and local regulations regarding protection from laser beams.
- ↳ The device must not be tampered with and must not be changed in any way.  
There are no user-serviceable parts inside the device.  
Repairs must only be performed by Leuze electronic GmbH + Co. KG.


**NOTICE**

**Affix laser information and warning signs!**

Laser information and warning signs are affixed to the device (see ①). In addition, self-adhesive laser information and warning signs (stick-on labels) are supplied in several languages (see ②).

- ↳ Affix the laser information sheet with the language appropriate for the place of use to the device.  
When using the device in the US, use the stick-on label with the "Complies with 21 CFR 1040.10" notice.
- ↳ Affix the laser information and warning signs near the device if no signs are attached to the device (e.g. because the device is too small) or if the attached laser information and warning signs are concealed due to the installation position.  
Affix the laser information and warning signs so that they are legible without exposing the reader to the laser radiation of the device or other optical radiation.

①



**A** Laser exit opening

②

**50107357-03**

LASERSTRAHLUNG  
NICHT IN DEN STRAHL BLICKEN

Max. Leistung (peak): 2.2 mW  
Impulsdauer: 13.8 µs  
Wellenlänge: 655 nm

LASER KLASSE 2  
DIN EN 60825-1:2008-05

LASER RADIATION  
DO NOT STARE INTO BEAM

Maximum Output (peak): 2.2 mW  
Pulse duration: 13.8 µs  
Wavelength: 655 nm

CLASS 2 LASER PRODUCT  
EN 60825-1:2007

AVOID EXPOSURE - LASER RADIATION  
IS EMITTED FROM THIS APERTURE

RADIACIÓN LASER  
NO MIRAR FIJAMENTE AL HAZ

Potencia máx. (peak): 2.2 mW  
Duración del impulso: 13.8 µs  
Longitud de onda: 655 nm

PRODUCTO LASER DE CLASE 2  
EN 60825-1:2007

LASER RADIATION  
DO NOT STARE INTO BEAM

Maximum Output (peak): 2.2 mW  
Pulse duration: 13.8 µs  
Wavelength: 655 nm

CLASS 2 LASER PRODUCT  
IEC 60825-1:2007  
Complies with 21 CFR 1040.10

RADIAZIONE LASER  
NON FISSARE IL FASCIO

Potenza max. (peak): 2.2 mW  
Durata dell'impulso: 13.8 µs  
Lunghezza d'onda: 655 nm

APPARECCHIO LASER DI CLASSE 2  
EN 60825-1:2007

RAYONNEMENT LASER  
NE PAS REGARDER DANS LE FASCIEAU

Puissance max. (crête): 2.2 mW  
Durée d'impulsion: 13.8 µs  
Longueur d'onde: 655 nm

APPAREIL A LASER DE CLASSE 2  
EN 60825-1:2007

RADIACÃO LASER  
NÃO OLHAR FIXAMENTE O FEIXE

Potência máx. (peak): 2.2 mW  
Período de pulso: 13.8 µs  
Comprimento de onda: 655 nm

EQUIPAMENTO LASER CLASSE 2  
EN 60825-1:2007

激光辐射  
勿直视光束

最大输出 (峰值): 2.2 mW  
脉冲持续时间: 13.8 µs  
波长: 655 nm

2 类激光产品  
GB7247.1-2012

