

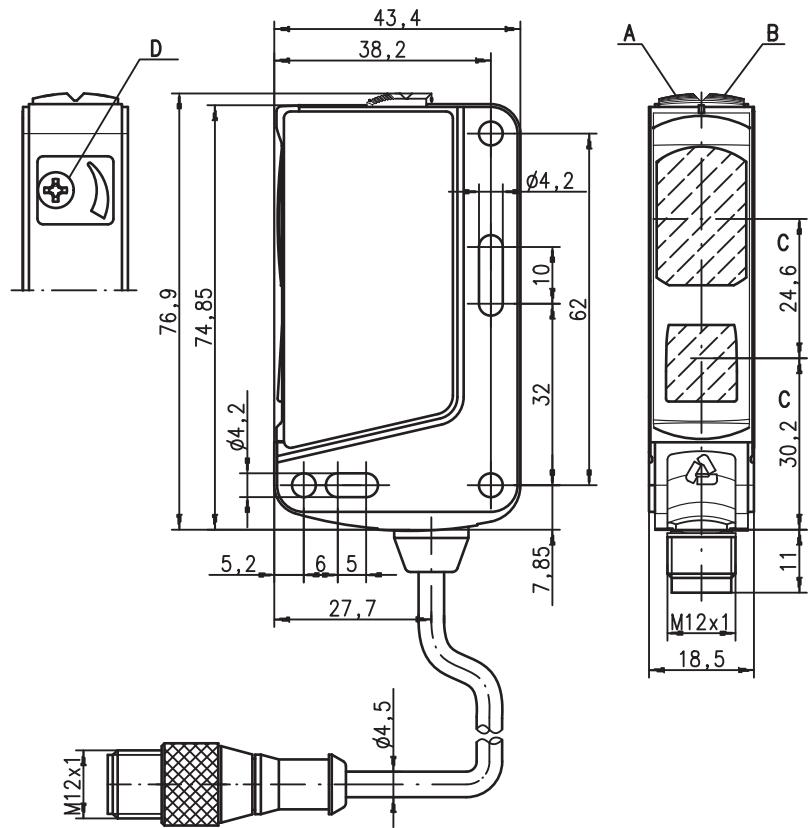
HRTL 46B

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



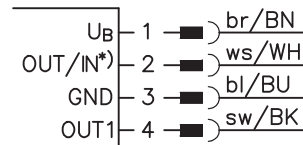
50 ... 1,200mm
800mm with
black-white error < 10%



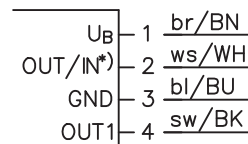
- Adjustable scanner with background suppression
- Exact positioning and detection of small parts by means of a laser beam
- Exact scanning range adjustment through multiturn potentiometer
- Fast alignment through *brightVision*®
- High switching frequency for detection of fast events
- A²LS - Active 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



Accessories:

(available separately)

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

We reserve the right to make changes • PAL_HRTL46B_en_50107353_03.fm

Specifications

Optical data		Red light
Typ. scanning range limit (white 90%) ¹⁾	50 ... 1,200mm	
Scanning range ²⁾	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	
Timing		
Switching frequency	1,000Hz	
Response time	0.5ms	
Delay before start-up	≤ 100ms	
Electrical data		
Operating voltage U_B ³⁾	10 ... 30VDC (incl. residual ripple)	
Residual ripple	≤ 15% of U_B	
Open-circuit current	≤ 30mA	
Switching output	.../66. ... 2 push-pull switching outputs ⁴⁾ pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching push-pull switching output ⁴⁾ .../6. ... pin 4: PNP light switching, NPN dark switching	
Signal voltage high/low	≥ ($U_B - 2V$) / ≤ 2V	
Output current	max. 100mA	
Indicators		
Green LED	ready	
Yellow LED	reflection	
Yellow LED, flashing	reflection, no performance reserve	
Mechanical data		
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	
Environmental data		
Ambient temp. (operation/storage)	-30°C ... +55°C ⁵⁾ / -40°C ... +70°C	
Protective circuit ⁶⁾	2, 3	
VDE safety class ⁷⁾	II, all-insulated	
Protection class	IP 67, IP 69K	
Standards applied	IEC 60947-5-2	
Certifications	UL 508, C22.2 No.14-13 ^{3) 5) 8)}	
Options		
Activation input active		
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.

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

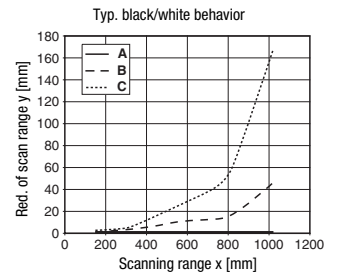
Tables

1	50	1,200
2	60	850
3	80	750

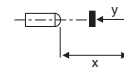
1	white 90%
2	grey 18%
3	black 6%

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

<p style="text-align: center;">LASERSTRAHLUNG NIGHT IN DEN STRAHL BLICKEN</p> <p>Max. Leistung (peak): 2.2 mW Impulsdauer: 13.8 µs Wellenlänge: 655 nm</p> <p style="text-align: center;">LASER KLASSE 2 DIN EN 60825-1:2008-05</p>	<p style="text-align: center;">RADIAZIONE LASER NON FISSARE IL FASCIO</p> <p>Potenza max. (peak): 2.2 mW Durata dell'impulso: 13.8 µs Lunghezza d'onda: 655 nm</p> <p style="text-align: center;">APPARECCHIO LASER DI CLASSE 2 EN 60825-1:2007</p>
<p style="text-align: center;">LASER RADIATION DO NOT STARE INTO BEAM</p> <p>Maximum Output (peak): 2.2 mW Pulse duration: 13.8 µs Wavelength: 655 nm</p> <p style="text-align: center;">CLASS 2 LASER PRODUCT EN 60825-1:2007</p>	<p style="text-align: center;">RAYONNEMENT LASER NE PAS REGARDER DANS LE FASCIEAU</p> <p>Puissance max. (crête): 2.2 mW Durée d'impulsion: 13.8 µs Longueur d'onde: 655 nm</p> <p style="text-align: center;">APPAREIL A LASER DE CLASSE 2 EN 60825-1:2007</p>
<p>AVOID EXPOSURE - LASER RADIATION IS EMITTED FROM THIS APERTURE</p>	<p>EXPOSITION DANGEREUSE - UN RAYONNEMENT LASER EST ÉMIS PAR CETTE OUVERTURE</p>
<p style="text-align: center;">RADIACIÓN LASER NO MIRAR FIJAMENTE AL HAZ</p> <p>Potencia máx. (peak): 2.2 mW Duración del impulso: 13.8 µs Longitud de onda: 655 nm</p> <p style="text-align: center;">PRODUCTO LASER DE CLASE 2 EN 60825-1:2007</p>	<p style="text-align: center;">RADIAÇÃO LASER NÃO OLHAR FIXAMENTE O FEIXE</p> <p>Potência máx. (peak): 2.2 mW Período de pulso: 13.8 µs Comprimento de onda: 655 nm</p> <p style="text-align: center;">EQUIPAMENTO LASER CLASSE 2 EN 60825-1:2007</p>
<p style="text-align: center;">LASER RADIATION DO NOT STARE INTO BEAM</p> <p>Maximum Output (peak): 2.2 mW Pulse duration: 13.8 µs Wavelength: 655 nm</p> <p style="text-align: center;">CLASS 2 LASER PRODUCT IEC 60825-1:2007 Complies with 21 CFR 1040.10</p>	<p style="text-align: center;">激光辐射 勿直视光束</p> <p>最大输出 (峰值): 2.2 mW 脉冲持续时间: 13.8 µs 波长: 655 nm</p> <p style="text-align: center;">2 类激光产品 GB7247.1-2012</p>