HRTL 46B Laser diffuse reflection light scanner with background suppression

en 06-2014/06 50107353-02

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

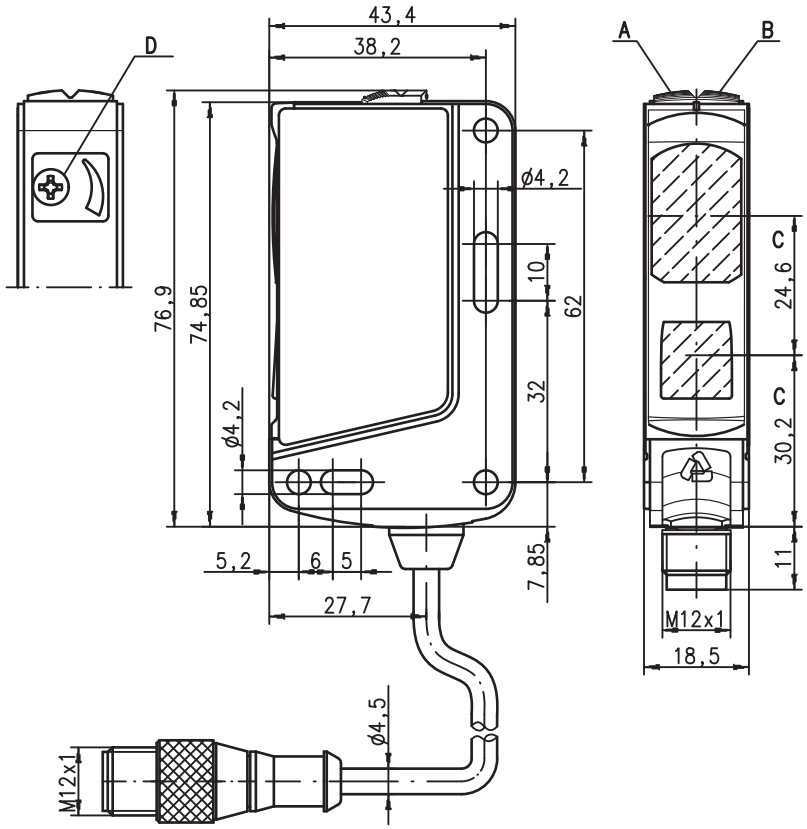
- Adjustable scanner with background suppression
- Exact positioning and detection of small parts by means of a laser beam
- Exact scanning range adjustment through multiturn potentiometer
- Fast alignment through *brightVision*®
- High switching frequency for detection of fast events
- A²LS - Active Ambient Light Suppression
- Complementary switching outputs for optimal adaptation to the application
- Activation for e.g. muting or test function

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 …)

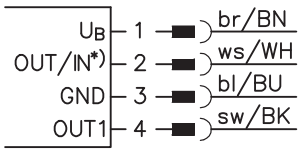
Dimensioned drawing



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

Electrical connection

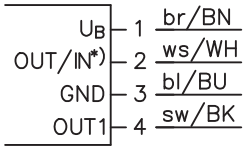
Connector, 4-pin



Selection pin 2

*)	OUT	IN
	OUT 2	active

Cable



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)
Wavelength		655nm (visible red light)
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
	…/6. …	push-pull switching output [4] 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/-40°C … +70°C
Protective circuit [5]		2, 3
VDE safety class [6]		II, all-insulated
Protection class		IP 67, IP 69K
Laser class		2 (acc. to EN 60825-1)
Standards applied		IEC 60947-5-2
Certifications		UL 508, C22.2 No.14-13 [3] [7]
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) 2=polarity reversal protection, 3=short-circuit protection for all outputs
6) Rating voltage 50V
7) 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

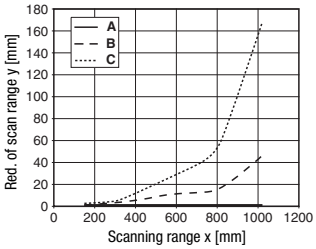
1	50	1,200
2	60	850
3	80	750

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

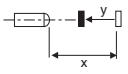
Scanning range [mm]

Diagrams

Typ. black/white behavior



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.

HRTL 46B Laser diffuse reflection light scanner with background suppression

Type key

HRTL 46B/6.8 -S12

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 2000 mm
,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 fulfills the EN 60825-1:2008-05 (IEC 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.
  The use of optical instruments or devices (e.g., magnifying glasses, binoculars) with the product will increase eye hazard.
- Adhere to the applicable legal and local regulations regarding protection from laser beams acc. to EN 60825 (IEC 60825) in its latest version.
- 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.

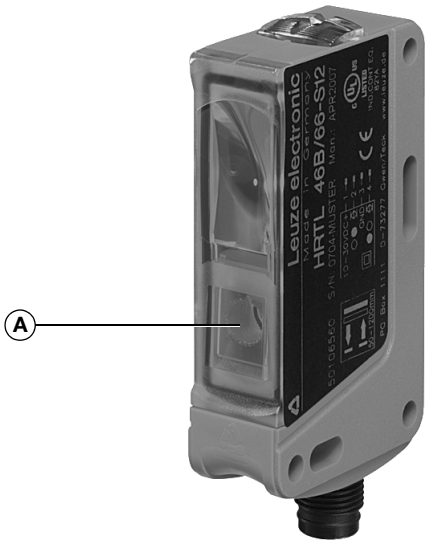
NOTICE

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