HRTL 46B Ex n Laser diffuse reflection light scanner with background suppression

en 02-2014/06 50123270-01

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

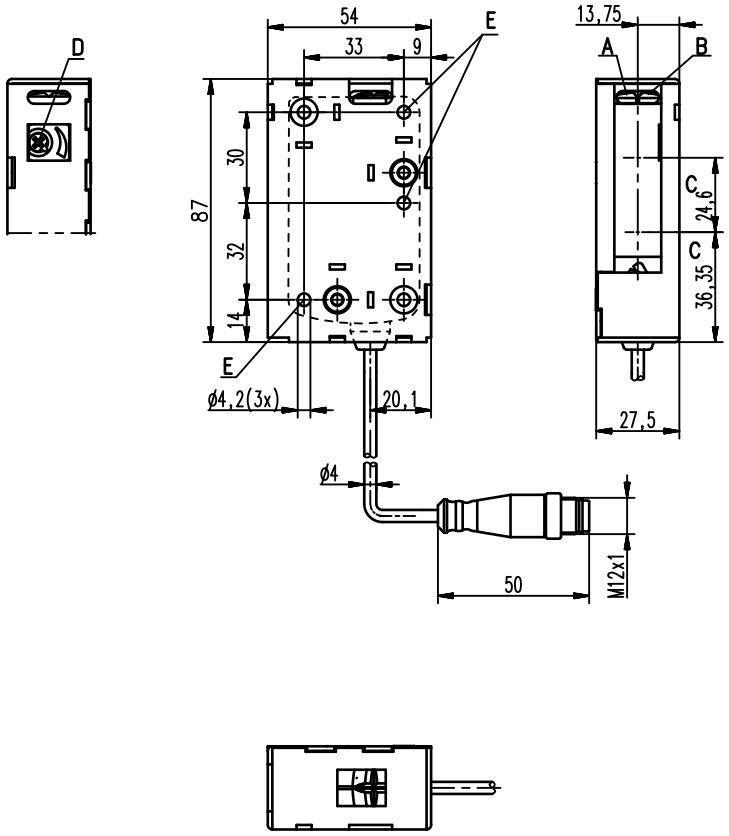
- Adjustable scanner with background suppression
- Exact positioning and detection of small parts by means of a laser beam
- Exact scanning range adjustment through multiturn potentiometer
- Fast alignment through *brightVision*®
- High switching frequency for detection of fast events
- A²LS - Active Ambient Light Suppression
- Complementary switching outputs for optimal adaptation to the application
- Activation for e.g. muting or test function
- Ex II 3G Ex nA op is IIB T4 Gc X
- Ex II 3D Ex tc IIIC T90°C Dc IP67 X

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 …)

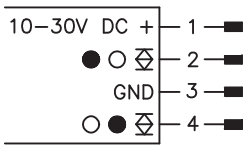
Dimensioned drawing



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

Electrical connection

HRTL 46B/66, 200-S12 S-Ex n



Specifications

Optical data		**Red light**
Typ. scanning range limit (white 90 %) [1]		50 … 1,200 mm
Scanning range [2]		see tables
Adjustment range		120 … 1,200 mm
Light source		laser (modulated light)
Wavelength		655 nm (visible red light)
Light spot		approx. 3 mm x 5 mm at 1,000 mm
Max. output power		2.2 mW
Pulse duration		13.8 µs
Timing		
Switching frequency		1,000 Hz
Response time		0.5 ms
Delay before start-up		≤ 100 ms
Electrical data		
Operating voltage U_B		10 … 30 VDC (incl. residual ripple)
Residual ripple		≤ 15 % of U_B
Open-circuit current		≤ 30 mA
Switching output	…/66. …	2 push-pull switching outputs [3] 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-2 V)/≤ 2 V
Output current		max. 100 mA
Indicators		
Green LED		ready
Yellow LED		reflection
Yellow LED, flashing		reflection, no performance reserve
Mechanical data		
Housing		plastic
Optics cover		plastic
Weight		50 g (with connector) / 65 g (with cable and conn.)
Connection type		M12 connector, or cable with M12 connector, cable length: 200 mm
Environmental data		
Ambient temp. (operation/storage)		-30 °C … +55 °C/-40 °C … +70 °C -10 °C … +40 °C/-40 °C … +70 °C [4]
Protective circuit [5]		2, 3
VDE safety class [6]		II, all-insulated
Protection class		IP 67, IP 69K
Laser class		2 in accordance with EN 60825-1:2007
Standards applied		IEC 60947-5-2
Explosion protection		
Certification (CENELEC)		⟨Ex⟩ II 3G Ex nA op is IIB T4 Gc X ⟨Ex⟩ II 3D Ex tc IIIC T90°C Dc IP67 X
Options		
Activation input active		
Transmitter active/not active		≥ 8 V/≤ 2 V
Activation/disable delay		≤ 1 ms/≤ 2 ms
Input resistance		10 KΩ ± 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) The push-pull switching outputs must not be connected in parallel
4) Temperature range for UL applications
5) 2=polarity reversal protection, 3=short circuit protection for all outputs
6) Rating voltage 50 V

Order guide

The sensors listed here are preferred types; current information at www.leuze.com.

Cable with M12 connector, length: 200 mm	**Designation**	**Part no.**
Complementary push-pull switching output		
Housing model S (standard)	HRTL 46B/66, 200-S12 S-Ex n	50114409

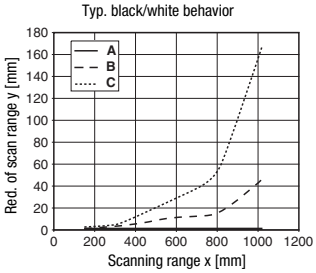
Tables

1	50	1,200
2	60	850
3	80	750

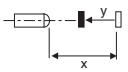
1	white 90 %
2	gray 18 %
3	black 6 %

Scanning range [mm]

Diagrams



A white 90 %
B gray 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.

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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!

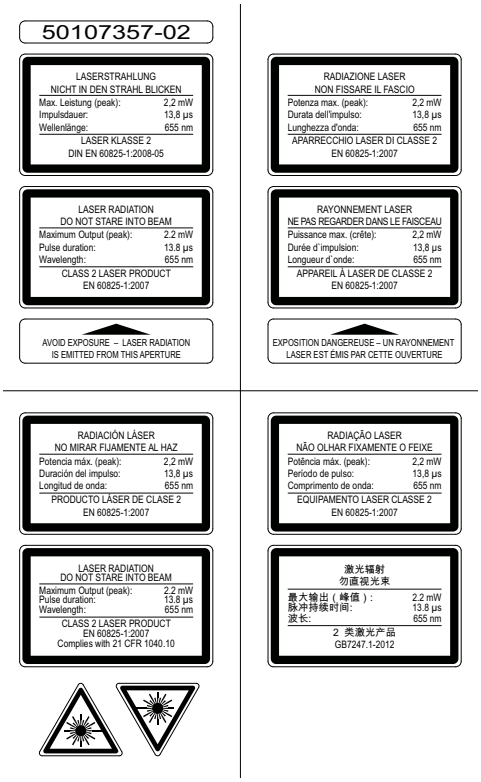
Laser information and warning signs are affixed to the device(see ①). In addition, self-adhesive laser information and warning signs (stick-on labels) are supplied in several languages (see ②).

- 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



Notices for the safe use of sensors in potentially explosive areas

This document is valid for devices with the following classifications:

Device group	Device category	Equipment protection level	Zone
II	**3G**	**Gc**	**Zone 2**
II	**3D**	**Dc**	**Zone 22**

Attention!

- Check whether the equipment classification corresponds to the requirements of the application.
- The devices are not suited for the protection of persons and may not be used for emergency shutdown purposes.
- A safe operation is only possible if the equipment is used properly and for its intended purpose.
- Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly or under unfavorable conditions in potentially explosive areas.
- The applicable national regulations (e.g. EN 60079-14) for the configuration and installation of explosion-proof systems must be observed without fail.

Installation and Commissioning

- The devices must only be installed and commissioned by trained electricians. They must be aware of the regulations and operation of explosion-proof equipment.
- To prevent unintentional separation under voltage, devices with connector (e.g. Series 46B) must be equipped with a safeguard or a mechanical interlocking guard (e.g. K-VM12-Ex, part no. 50109217). 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.
- Prevent dust deposits from forming on the devices.
- Metallic parts (e.g. housing, mounting devices) are to be integrated into the potential equalization to prevent electrostatic charge.

Maintenance

- No changes may be made to explosion-proof devices.
- Repairs may only be performed by a person trained for such work or by the manufacturer.
- Defective devices must be replaced immediately.
- Cyclical maintenance is generally not necessary.
- Depending on the environmental conditions, it may occasionally be necessary to clean the optical surfaces of the sensors. This cleaning must only be performed by persons trained for this task. We recommend using a soft, damp cloth. Cleaning agents that contain solvents must not be used.

Chemical resistance

- The sensors demonstrate good resistance against diluted (weak) acids and bases.
- Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.
- Resistance to chemicals must be examined on a case by case basis.

Special conditions

- The devices must be installed in such a way that they are protected from direct exposure to UV rays (sunlight).
- Static charge on plastic surfaces must be avoided.

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Leuze electronic

the sensor people

EG-KONFORMITÄTS-ERKLÄRUNG

Der Hersteller

Leuze electronic GmbH + Co. KG
In der Braike 1, PO Box 1111
73277 Owen, Germany

erklärt, dass die nachfolgend aufgeführten Produkte den einschlägigen Anforderungen der genannten EG-Richtlinien und Normen entsprechen.

Produktbeschreibung:

Laser-Reflexions-Lichttaster mit Hintergrundausblendung HRTL 46B/...S-Ex n

Kennzeichnung Gas / Staub:

Ex II 3G Ex nA op is IIB T4 Gc X / Ex II 3D Ex tc IIIC T90° C Dc IP67 X

Angewandte EG-Richtlinie(n):

94/9/EG
2004/108/EG

Angewandte Normen:

EN 60079-0: 2009
EN 60079-28: 2007
EN 609478-5-2: 2007

EC DECLARATION OF CONFORMITY

The Manufacturer

Leuze electronic GmbH + Co. KG
In der Braike 1, PO Box 1111
73277 Owen, Germany

declares that the following listed products fulfil the relevant provisions of the mentioned EC Directives and standards.

Description of product:

Laser diffuse reflection light scanner with background suppression HRTL 46B/... S-Ex n

Marking for gas / dust:

Applied EC Directive(s):

94/9/EC
2004/108/EC

Applied standards:

DECLARATION CE DE CONFORMITE

Le constructeur

déclare que les produits identifiés suivants sont conformes aux directives CE et normes mentionnées.

Description de produit:

Cellule reflex laser à détection directe avec élimination de l`arrière-plan HRTL 46B/... S-Ex n

Marquage gaz / poussière:

Directive(s) CE appliquées:

94/9/CE
2004/108/CE

Normes appliquées:

EN 60079-15: 2005
EN 60079-31: 2009
EN 60825-1: 2007

3.6.2013
Datum / Date / Date

Ulrich Balbach, Geschäftsführer / Director / Directeur

Leuze electronic GmbH + Co. KG
In der Braike 1
D-73277 Owen
Telefon +49 (0) 7021 573-0
Telefax +49 (0) 7021 573-199
info@leuze.de
www.leuze.com

Leuze electronic GmbH + Co. KG, Sitz Owen, Registergericht Stuttgart, HRA 230712
Persönlich haftende Gesellschafterin Leuze electronic Geschäftsführungs-GmbH,
Sitz Owen, Registergericht Stuttgart, HRB 230550
Geschäftsführer: Ulrich Balbach, Dr. Matthias Kirchherr
USt.-IdNr. DE 145912521 | Zollnummer 2554232
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