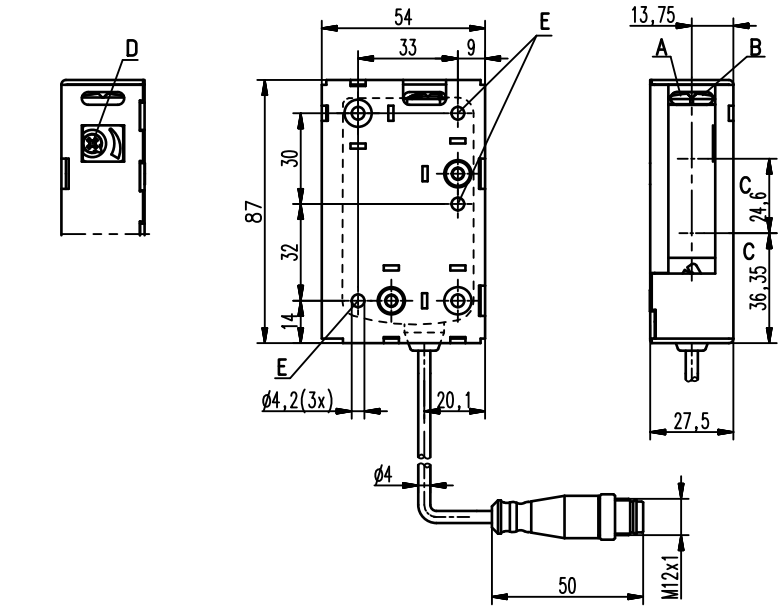


HRTL 46B Ex n Laser diffuse reflection light scanner with background suppression

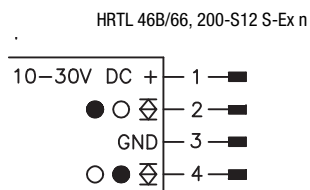
Dimensioned drawing

en 03-2017/02 50123270-02

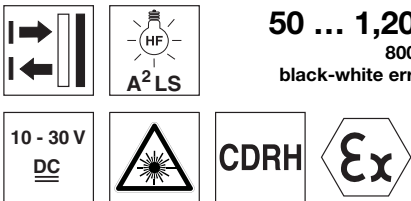


- A** Green indicator diode
- B** Yellow indicator diode
- C** Optical axis
- D** Scanning range adjustment
- E** Fastening hole

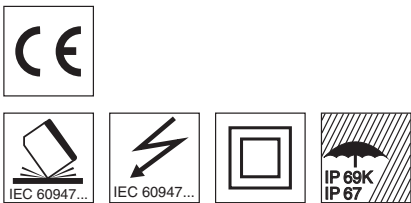
Electrical connection



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 (KD ...)

We reserve the right to make changes • PAL_HRTL46BEx_en_50123270_02.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾
 Scanning range ²⁾
 Adjustment range
 Light source
 Laser class
 Wavelength
 Light spot

Red light

50 ... 1,200mm
 see tables
 120 ... 1,200mm
 laser (modulated light)
 2 in accordance with IEC 60825-1:2007
 655nm (visible red light)
 approx. 3mm x 5mm at
 1,000mm
 2.2mW
 13.8µs

Max. output power
 Pulse duration

Timing

Switching frequency 1,000Hz
 Response time 0.5ms
 Delay before start-up ≤ 100ms

Electrical data

Operating voltage U_B 10 ... 30VDC (incl. residual ripple)
 Residual ripple ≤ 15% of U_B
 Open-circuit current ≤ 30mA
 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
 push-pull switching output ⁴⁾ .../6. ...
 pin 4: PNP light switching, NPN dark switching
 ≥ ($U_B - 2V$) / ≤ 2V
 max. 100mA

Signal voltage high/low
 Output current

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
 -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
 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 ≥ 8V / ≤ 2V
 Activation/disable delay ≤ 1 ms / ≤ 2 ms
 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) 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 50V

Order guide

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

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

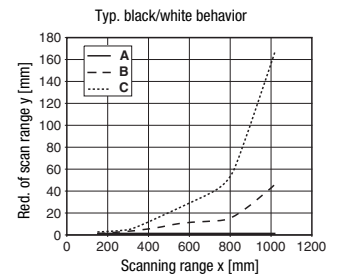
Tables

1	50	1,200
2	60	850
3	80	750

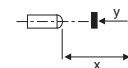
1	white 90%
2	gray 18%
3	black 6%

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.

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

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

RADIACIONE 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

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

RAYONNEMENT LASER
NE PAS REGARDER DANS LE FASCIEU

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

AVOID EXPOSURE – LASER RADIATION
IS EMITTED FROM THIS APERTURE

EXPOSITION DANGEREUSE – UN RAYONNEMENT
LASER EST EMIS PAR CETTE OUVERTURE

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

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

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

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

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.