

HT46CL2 Laser diffuse reflection light scanner with background suppression

en 01-2016/09 50134785



50 ... 1200mm
1000mm with
black-white error < 10%

10 - 30 V DC

CDRH

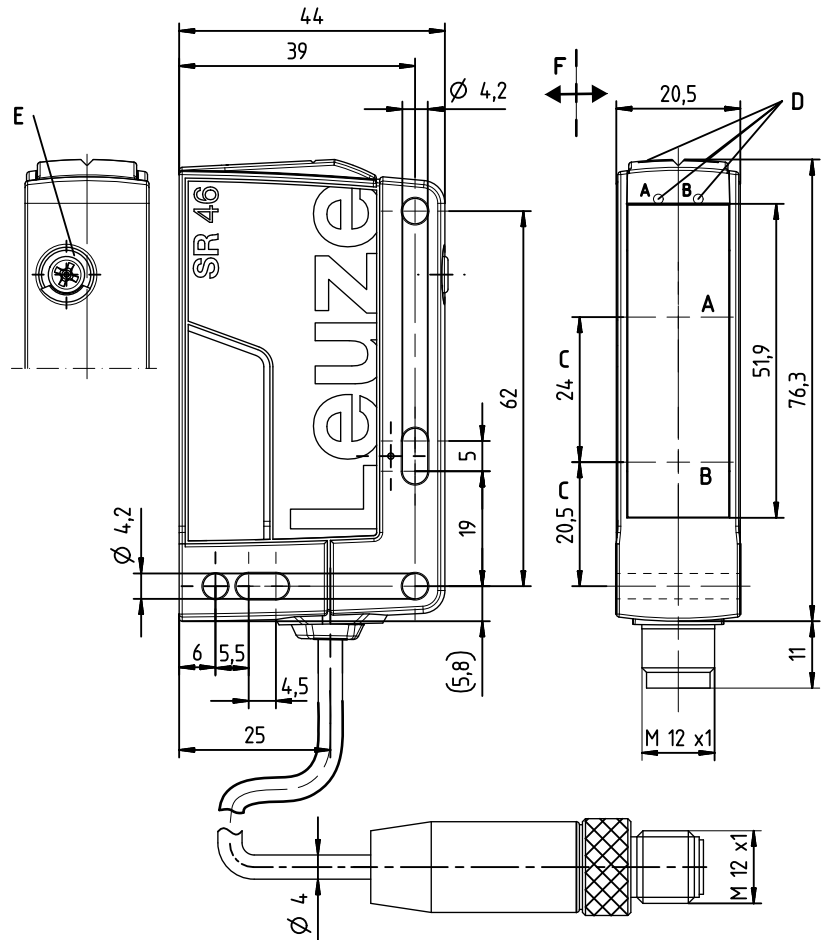
- Laser diffuse reflection light scanner with visible red light and adjustable background suppression
- Large adjustment range and minimal zero distance for optimum adaptation to the application
- Highly visible status displays
- Exact switching point adjustment through mechanical adjusting spindle
- Activation input for sensor test
- High switching frequency for detection of fast events
- Various switching output functions for universal connection to existing control environment
- A²LS active ambient light suppression for avoiding mutual interference
- Robust plastic housing in degrees of protection IP67 and IP69K
- Laser class 2

CE, UL LISTED, ECOLAB, IEC 60947..., IEC 60947..., IP 69K IP 67

Accessories:

- (available separately)
- Mounting systems (BT 46, BTU 300M, BT 300, BTU 346)
 - M12 connectors (KD ...)
 - Ready-made cables (K-D ...)

Dimensioned drawing



- A** Receiver
- B** Transmitter
- C** Optical axis
- D_A** Green indicator diode
- D_B** Yellow indicator diode
- E** Scanning range adjustment
- F** Preferred movement for objects

Electrical connection

Connector, 4-pin

U _B	1	br/BN
OUT/IN ^{*)}	2	ws/WH
GND	3	bl/BU
OUT1	4	sw/BK

Cable

U _B	1	br/BN
OUT/IN ^{*)}	2	ws/WH
GND	3	bl/BU
OUT1	4	sw/BK

Selection pin 2

^{*)}	OUT	IN
	OUT 2	active
	NC	deactive

We reserve the right to make changes • DS_HT46CL2_en_50134785.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	50 ... 1200mm
Scanning range ²⁾	see diagrams
Black-white error	<10% up to 1000mm
Scanning range adjustment	mechanical adjusting spindle
Adjustment range	120 ... 1200mm
Light source	laser, pulsed
Laser class	2 acc. to IEC 60825-1:2007
Wavelength	655nm (visible red light)
Max. output power	≤ 7.6mW
Pulse duration	≤ 5μs
Light spot	approx. 3mm x 5mm at 1000mm

Timing

Switching frequency	500Hz
Response time	1ms
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	≤ 20mA
Switching outputs/functions ⁴⁾	/4P 2 PNP switching outputs, antivalent /4X 1 PNP switching output, light switching /48 1 PNP switching output, light switching, 1 activation input /PX 1 PNP switching output, dark switching /2N 2 NPN switching outputs, antivalent
Signal voltage high/low	≥ ($U_B - 2V$) / ≤ 2V
Output current	max. 100mA

Indicators

Green LED	ready
Yellow LED	reflection

Mechanical data

Housing	plastic	
Optics cover	plastic	
Weight	with M12 connector: approx. 60g with 200mm cable and M12 connector: approx. 65g with 2000mm cable: approx. 100g	
Connection type	M12 connector, 4-pin cable 200mm with M12 connector, 4-pin cable 2000mm, 4 x 0.21 mm ²	

Environmental data

Ambient temp. (operation/storage)	-40°C ... +60°C / -40°C ... +70°C
Protective circuit ⁵⁾	1, 2, 3
VDE safety class ⁶⁾	II, all-insulated
Protection class	IP 67, IP 69K
Standards applied	IEC 60947-5-2
Certifications	UL 508, CSA C22.2 No.14-13 ⁴⁾ 7)

Options

Activation input

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) See part number code
- 5) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all transistor 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)

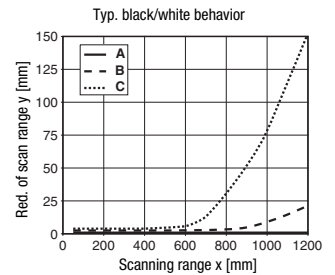
Tables

1	50	1000
2	70	750
3	90	600

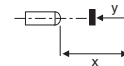
1	white 90%
2	gray 18%
3	black 6%

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.

HT46CL2 Laser diffuse reflection light scanner with background suppression

Part number code

H T 4 6 C L 1 / 4 P - 2 0 0 - M 1 2

Operating principle

HT Diffuse reflection light scanners with background suppression

Series

46C 46C series

Light type

Free Red light

I Infrared light

Laser class

L2 Laser class 2 according to IEC 60825-1:2007

Setting

Free Scanning range adjustment via mechanical adjusting spindle

Pin assignment of OUT1 (connector pin 4 / black cable wire)

2 NPN, light switching

N NPN, dark switching

4 PNP, light switching

P PNP, dark switching

Pin assignment of OUT/IN (connector pin 2 / white cable wire)

X Not assigned

2 NPN, light switching

N NPN, dark switching

4 PNP, light switching

P PNP, dark switching

8 Activation input (active high)

Connection technology

M12 M12 connector, 4-pin

200-M12 Cable 200 mm with M12 connector, 4-pin

Free Cable 2000 mm

Order guide

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

Laser diffuse reflection light scanner with background suppression

Designation

Part no.

With M12 connector, 4-pin

OUT1: PNP light switching; OUT2: PNP dark switching

HT46CL2/4P-M12

50134608

OUT1: PNP light switching; IN: activation input active high

HT46CL2/48-M12

50127060

OUT1: NPN light switching; OUT2: NPN dark switching

HT46CL2/2N-M12

50134610

Cable 0.2m with M 12 connector, 4-pin

OUT1: PNP light switching; OUT2: PNP dark switching

HT46CL2/4P-200-M12

50134609

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.

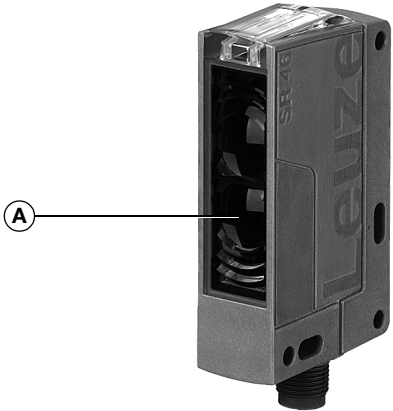
NOTICE

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

50134946

LASERSTRAHLUNG NICHT IN DEN STRAHL BLICKEN	
Max. Leistung (peak):	≤ 7,6 mW
Impulsdauer:	≤ 5 µs
Wellenlänge:	655 nm
LASER KLASSE 2 DIN EN 60825-1:2008-05	

LASER RADIATION DO NOT STARE INTO BEAM	
Maximum Output (peak):	≤ 7,6 mW
Pulse duration:	≤ 5 µs
Wavelength:	655 nm
CLASS 2 LASER PRODUCT EN 60825-1:2007	

AVOID EXPOSURE – LASER RADIATION
IS EMITTED FROM THIS APERTURE

RADIACION LASER NO MIRAR FIJAMENTE AL HAZ	
Potencia máx. (peak):	≤ 7,6 mW
Duración del impulso:	≤ 5 µs
Longitud de onda:	655 nm
PRODUCTO LASER DE CLASE 2 EN 60825-1:2007	

RADIACIÓN LASER DO NOT STARE INTO BEAM	
Maximum Output (peak):	≤ 7,6 mW
Pulse duration:	≤ 5 µs
Wavelength:	655 nm
CLASS 2 LASER PRODUCT IEC 60825-1:2007 Complies with 21 CFR 1040.10	

RADIACION LASER NON FISSARE IL FASCIO	
Potenza max. (peak):	≤ 7,6 mW
Durata dell'impulso:	≤ 5 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):	≤ 7,6 mW
Durée d'impulsion:	≤ 5 µs
Longueur d'onde:	655 nm
APPAREIL A LASER DE CLASSE 2 EN 60825-1:2007	

EXPOSITION DANGEREUSE – UN RAYONNEMENT
LASER EST EMIS PAR CETTE OUVERTURE

RADIACÃO LASER NÃO OLHAR FIXAMENTE O FEIXE	
Potência máx. (peak):	≤ 7,6 mW
Período de pulso:	≤ 5 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):	≤ 7,6 mW
脉冲持续时间:	≤ 5 µs
波长:	655 nm
2 类激光产品 GB7247.1-2012	

