

HRTL 8

Laser diffuse reflection sensor with background suppression

2024/06/14 50116483-03



CDRH 5 ... 400mm



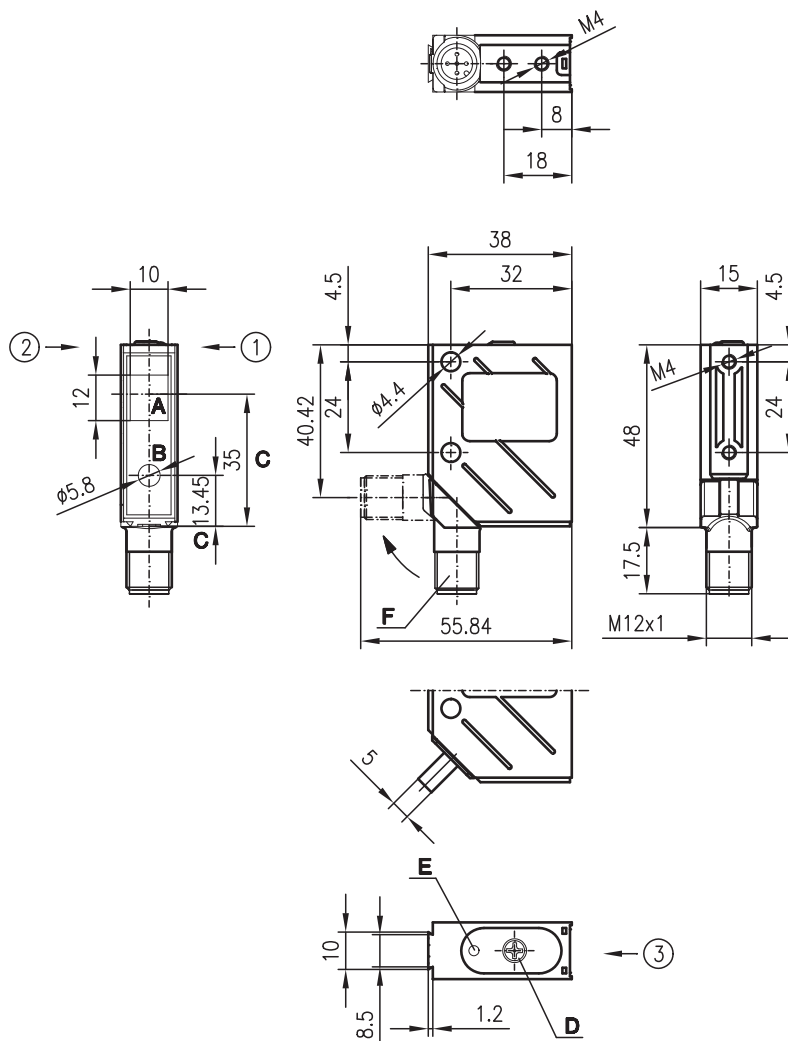
- Laser-generated red light, laser class 2
- Adjustable background suppression
- A²LS - Active Ambient Light Suppression
- Push-pull outputs
- M12 turning connector or cable connection

Accessories:

(available separately)

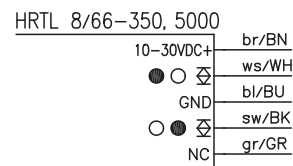
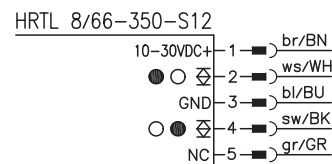
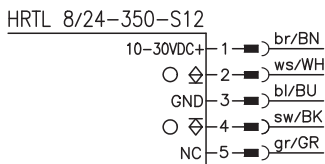
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Mounting systems
- Control guard

Dimensioned drawing



- A Receiver
 - B Transmitter
 - C Optical axis
 - D Operational control
 - E Yellow LED
 - F Turning connector, turnable 90°
- Preferred entry direction for objects ① + ② + ③

Electrical connection



We reserve the right to make changes

Technical data

Optical data

Typ. maximum range (white 90%) ¹⁾
 Operating range ²⁾
 Adjustment range, mechanical
 Light beam characteristic
 Beam divergence
 Light source
 Laser class

Wavelength
 Max. output power (peak)
 Pulse duration

Time behavior

Switching frequency
 Response time
 Readiness delay

Electrical data

Operating voltage U_B ³⁾
 Residual ripple
 Open-circuit current
 Signal voltage high/low
 Switching output/function

Output current
 Range adjustment

Indicators

Yellow LED

Mechanical data

Housing
 Optics cover
 Weight (plug/cable)
 Connection type

Environmental data

Ambient temp. (operation/storage)
 Protective circuit ⁵⁾
 VDE protection class ⁶⁾
 Degree of protection ⁷⁾
 Standards applied
 Certifications

Laser class 2

5 ... 400mm
 See tables
 50 ... 400mm
 Focused
 ≥ 0.5 mrad
 Laser
 2 in acc. with IEC 60825-1:2014 /
 EN 60825-1:2014+A11:2021
 655 nm (visible red light)
 3mW
 $\leq 8\mu s$

2000 Hz
 0.25ms
 $\leq 100ms$

10 ... 30VDC
 $\leq 15\%$ of U_B
 $\leq 35mA$
 $\geq (U_B - 2V) \leq 2V$
 .../24 PNP and NPN transistor output, light switching
 .../66 2 push-pull switching outputs ⁴⁾
 Pin 2: PNP dark switching, NPN light switching
 Pin 4: PNP light switching, NPN dark switching
 Max. 100mA
 Mechanical via multiturn potentiometer

Object detected

Metal
 Glass
 70g/140g
 M12 connector, 5-pin or
 Cable: 2000mm, 5x0.25mm²

-10 °C ... +40 °C / -40 °C ... +70 °C
 2, 3
 II, all-insulated
 IP 67, IP 69K ⁸⁾
 IEC 60947-5-2
 UL 508, C22.2 No.14-13 ^{3) 9)}

- 1) Typ. maximum range: max. attainable range without function reserve
- 2) Operating range: recommended range with function reserve
- 3) For UL applications: use is permitted exclusively in Class 2 circuits according to NEC
- 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 250VAC
- 7) In end position of the turning connector (turning connector engaged)
- 8) IP 69K test acc. to DIN 40050 part 9 simulated, high pressure cleaning conditions without the use of additives, acids and bases are not part of the test
- 9) 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)

NOTES



Observe 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 its intended use.

Order guide

	Designation	Part no.
With M12 connector	HRTL 8/24-350-S12	50036370
With M12 connector	HRTL 8/66-350-S12	50102705
With 5m cable	HRTL 8/66-350, 5000	50103709

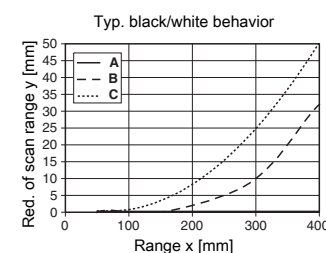
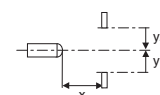
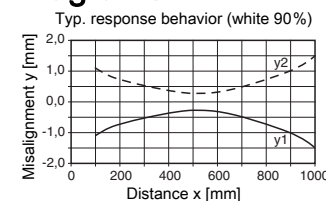
Tables

1	7	350	400
2	10	330	370
3	12	300	340

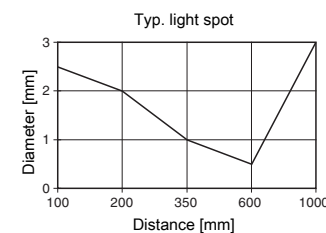
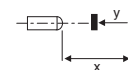
1	White 90%
2	Gray 18%
3	Black 6%

□ Operating range [mm]
 ■ Typ. maximum range [mm]

Diagrams



A White 90%
 B Gray 18%
 C Black 6%



Notes

- With glossy surfaces, mount at an inclination of approx. 10°.

Laser safety notices

⚠ ATTENTION, LASER RADIATION – CLASS 2 LASER PRODUCT



Do not stare into beam!

The device satisfies the requirements of IEC 60825-1:2014 / EN 60825-1:2014+A11:2021 safety regulations for a product of **laser class 2** and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

- ⚠ Never look directly into the laser beam or in the direction of reflected 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!
- ⚠ Interrupt the laser beam using a non-transparent, 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.
- ⚠ Observe the applicable statutory and local laser protection regulations.
- ⚠ The device must not be tampered with and must not be changed in any way.
There are no user-serviceable parts inside the device.
- ⚠ **CAUTION!** Opening the device may result in hazardous radiation exposure!
Repairs must only be performed by Leuze electronic GmbH + Co. KG.

NOTE

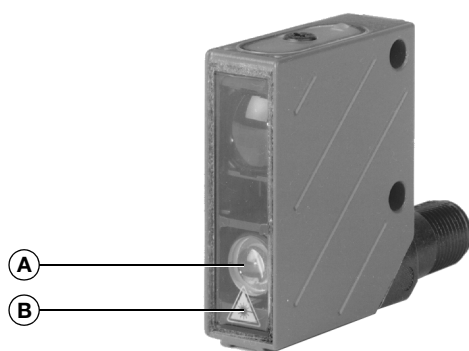


Affix laser information and warning signs!

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

- ⚠ Affix the laser information sheet to the device in the language appropriate for the place of use.
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 aperture
- B Laser warning sign

②

50107525-05

<p>LASERSTRAHLUNG NICHT IN DEN STRAHL BLICKEN</p> <p>Max. Leistung (peak): 3 mW Impulsdauer: <math>\leq 8 \mu\text{s}</math> Wellenlänge: 655 nm</p> <p>LASERKLASSE 2 EN 60825-1:2014+A11:2021</p>	<p>RADIAZIONE LASER NON FISSARE IL FASCIO</p> <p>Potenza max. (peak): 3 mW Durata dell'impulso: <math>\leq 8 \mu\text{s}</math> Lunghezza d'onda: 655 nm</p> <p>APPARECCHIO LASER DI CLASSE 2 EN 60825-1:2014+A11:2021</p>
<p>LASER RADIATION DO NOT STARE INTO BEAM</p> <p>Maximum Output (peak): 3 mW Pulse duration: <math>\leq 8 \mu\text{s}</math> Wavelength: 655 nm</p> <p>CLASS 2 LASER PRODUCT EN 60825-1:2014+A11:2021</p>	<p>RAYONNEMENT LASER NE PAS REGARDER DANS LE FASCEAU</p> <p>Puissance max. (crête): 3 mW Durée d'impulsion: <math>\leq 8 \mu\text{s}</math> Longueur d'onde: 655 nm</p> <p>APPAREIL À LASER DE CLASSE 2 EN 60825-1:2014+A11:2021</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>RADIACIÓN LASER NO MIRAR FIJAMENTE AL HAZ</p> <p>Potencia máx. (pico): 3 mW Duración del impulso: <math>\leq 8 \mu\text{s}</math> Longitud de onda: 655 nm</p> <p>PRODUCTO LASER DE CLASE 2 EN 60825-1:2014+A11:2021</p>	<p>RADIAÇÃO LASER NÃO OLHAR FIXAMENTE O FEIXE</p> <p>Potência máx. (pico): 3 mW Período de pulso: <math>\leq 8 \mu\text{s}</math> Comprimento de onda: 655 nm</p> <p>EQUIPAMENTO LASER CLASSE 2 EN 60825-1:2014+A11:2021</p>
<p>LASER RADIATION DO NOT STARE INTO BEAM</p> <p>Maximum Output (peak): 3 mW Pulse duration: <math>\leq 8 \mu\text{s}</math> Wavelength: 655 nm</p> <p>CLASS 2 LASER PRODUCT IEC 60825-1:2014 Complies with 21 CFR 1040.10</p>	<p>激光辐射 勿直视光束</p> <p>最大输出 (峰值): 3 mW 脉冲持续时间: <math>\leq 8 \mu\text{s}</math> 波长: 655 nm</p> <p>2 类激光产品 IEC 60825-1:2014</p>