

## HRTL 8

## Laser diffuse reflection light scanner with background suppression

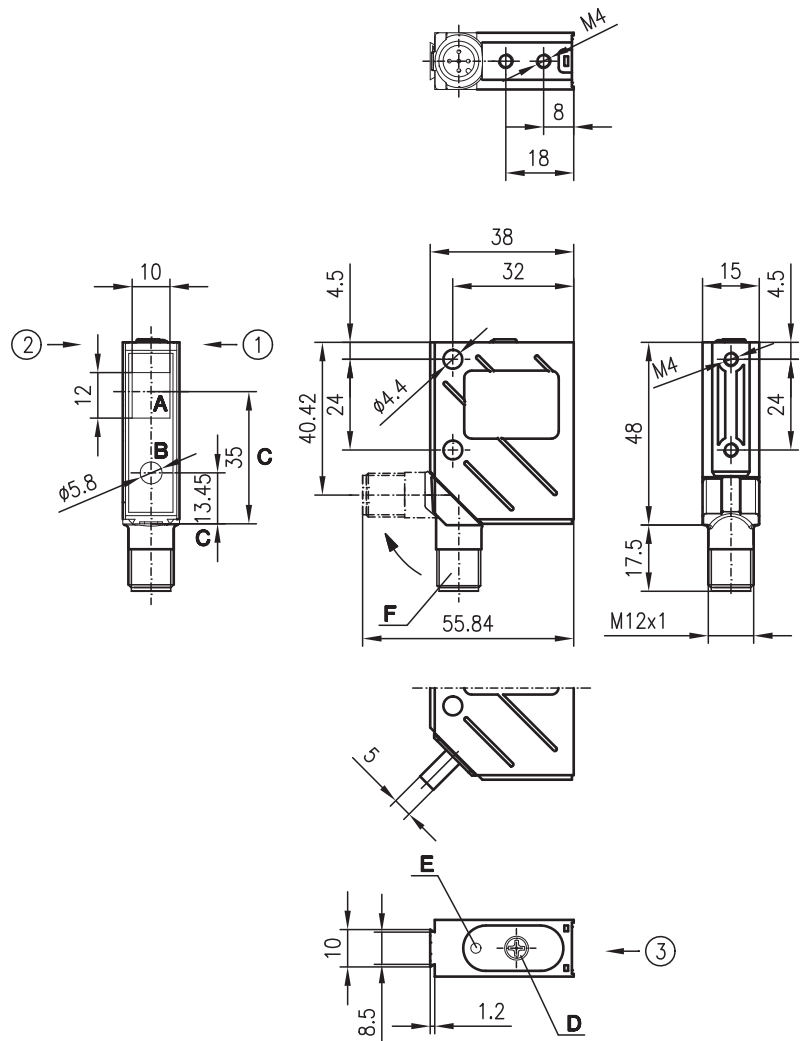
### Dimensioned drawing



10 ... 200mm  
25 ... 200mm



- Laser, red light, laser class 1 and 2
- Adjustable background suppression
- A²LS - Active Ambient Light Suppression
- Push-pull switching outputs
- M12 turning connector or cable connection



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

### Electrical connection

HRTL 8/24-150  
HRTL 8/24-150-S12

|           |   |       |
|-----------|---|-------|
| 10-30VDC+ | 1 | br/BN |
| ○ ⊗       | 2 | ws/WH |
| ○ ⊗       | 3 | bl/BU |
| ○ ⊗       | 4 | sw/BK |
| NC        | 5 | gr/GR |

HRTL 8/66-150-S12  
HRTL 8/66.09-150-S12

|           |   |       |
|-----------|---|-------|
| 10-30VDC+ | 1 | br/BN |
| ● ○ ⊗     | 2 | ws/WH |
| ● ○ ⊗     | 3 | bl/BU |
| ● ○ ⊗     | 4 | sw/BK |
| NC        | 5 | gr/GR |



### Accessories:

(available separately)

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

## Specifications

### Optical data

Typ. scanning range limit (white 90%) <sup>1)</sup>  
 Scanning range <sup>2)</sup>  
 Mechanical adjustment range  
 Light beam characteristic  
 Beam spread  
 Light source  
 Wavelength

### Laser class 2

10 ... 200mm  
 see tables  
 50 ... 200mm  
 focussed  
 $\geq 0.5\text{mrad}$   
 laser  
 655nm (visible red light)

### Laser class 1

25 ... 200mm  
 50 ... 200mm  
 670nm (visible red light)

### Timing

Switching frequency  
 Response time  
 Delay before start-up

2000Hz  
 0.25ms  
 $\leq 100\text{ms}$

### Electrical data

Operating voltage  $U_B$  <sup>3)</sup>  
 Residual ripple  
 Open-circuit current  
 Switching output/function

10 ... 30VDC  
 $\leq 15\%$  of  $U_B$   
 $\leq 35\text{mA}$   
 .../24 PNP and NPN transistor output, light switching  
 .../66 2 push-pull switching outputs <sup>4)</sup>  
 pin 2: PNP dark switching, NPN light switching  
 pin 4: PNP light switching, NPN dark switching  
 $\geq (U_B - 2\text{V}) \leq 2\text{V}$   
 max. 100mA  
 mechanical via multiturn potentiometer

Signal voltage high/low  
 Output current  
 Scanning range adjustment

### Indicators

Yellow LED

object detected

### Mechanical data

Housing  
 Optics cover  
 Weight (plug/cable)  
 Connection type

metal  
 glass  
 70g/140g  
 M12 connector, 5-pin or  
 cable: 2000mm, 5x0.25mm<sup>2</sup>

### Environmental data

Ambient temp. (operation/storage)  
 Protective circuit <sup>5)</sup>  
 VDE safety class <sup>6)</sup>  
 Protection class <sup>7)</sup>  
 Laser class  
 Standards applied  
 Certifications

-10°C ... +40°C/-40°C ... +70°C  
 2, 3  
 II, all-insulated  
 IP 67, IP 69K <sup>8)</sup>  
 2 (acc. to EN 60825-1) 1 (acc. to EN 60825-1)  
 IEC 60947-5-2  
 UL 508, C22.2 No.14-13 <sup>3) 9)</sup>

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) For UL applications: for use in class 2 circuits according to NEC 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 250VAC
- 7) In stop position of the turning connector (turning connector locked)
- 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)

### 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.

## Order guide

### Laser class 2

With M12 connector  
 With 2m cable

With M12 connector

### Laser class 1

With M12 connector

### Designation

HRTL 8/24-150-S12

HRTL 8/24-150

HRTL 8/66-150-S12

HRTL 8/66.09-150-S12

### Part No.

50038482

50038483

50102704

50115688

## Tables

### Laser class 2:

|   |    |     |     |
|---|----|-----|-----|
| 1 | 10 | 150 | 200 |
| 2 | 25 | 148 | 190 |
| 3 | 30 | 143 | 175 |

### Laser class 1:

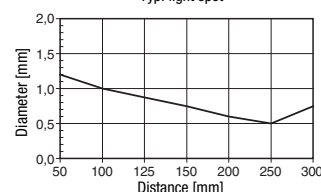
|   |    |     |     |
|---|----|-----|-----|
| 1 | 25 | 150 | 200 |
| 2 | 45 | 140 | 185 |
| 3 | 50 | 130 | 170 |

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

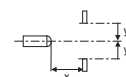
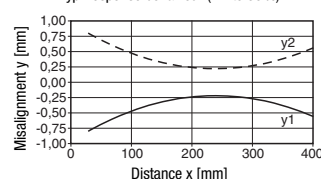
Scanning range [mm]  
 Typ. scanning range limit [mm]

## Diagrams

Typ. light spot

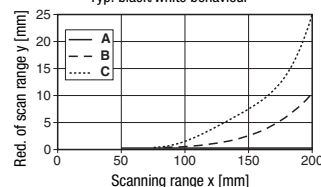


Typ. response behaviour (white 90%)



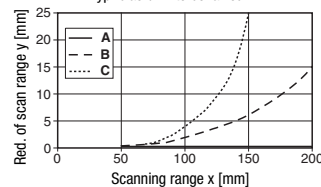
### Laser class 2:

Typ. black/white behaviour

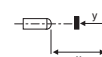


### Laser class 1:

Typ. black/white behaviour



A white 90%  
 B gray 18%  
 C black 6%



## Remarks

- Install sensor inclined at angle of approx. 10° if used to detect objects with shiny surfaces.

## HRTL 8 Laser diffuse reflection light scanner with background suppression

### Laser safety notices - HRTL 8/66.09-150-...



#### ATTENTION, LASER RADIATION – LASER CLASS 1

The device fulfills the EN 60825-1:2008-05 (IEC 60825-1:2007) safety regulations for a product in **laser class 1** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24th, 2007.

- ↳ 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.

## Laser safety notices - HRTL 8/24-150-... / HRTL 8/66-150-...



### 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.

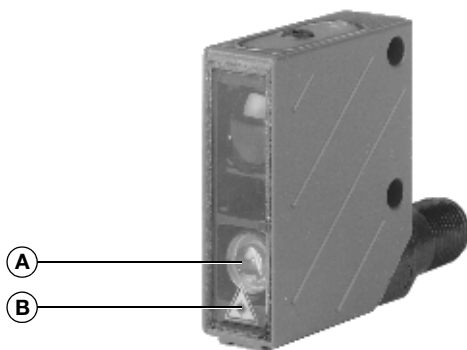
### NOTICE

#### 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
- B Laser warning sign

②

50107525-03

|                                                                                                                                                                                                                         |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LASERSTRAHLUNG</b><br><b>NICHT IN DEN STRAHL BLICKEN</b><br>Max. Leistung (peak): 3 mW<br>Impulsdauer: 8 µs<br>Wellenlänge: 655 nm<br><b>LASER KLASSE 2</b><br>DIN EN 60825-1:2008-05                                | <b>RADIAZIONE LASER</b><br><b>NON FISSARE IL FASCIO</b><br>Potenza max. (peak): 3 mW<br>Durata dell'impulso: 8 µs<br>Lunghezza d'onda: 655 nm<br><b>APPARECCHIO LASER DI CLASSE 2</b><br>EN 60825-1:2007           |
| <b>LASER RADIATION</b><br><b>DO NOT STARE INTO BEAM</b><br>Maximum Output (peak): 3 mW<br>Pulse duration: 8 µs<br>Wavelength: 655 nm<br><b>CLASS 2 LASER PRODUCT</b><br>EN 60825-1:2007                                 | <b>RAYONNEMENT LASER</b><br><b>NE PAS REGARDER DANS LE FASCEAU</b><br>Puissance max. (crête): 3 mW<br>Durée d'impulsion: 8 µs<br>Longueur d'onde: 655 nm<br><b>APPAREIL À LASER DE CLASSE 2</b><br>EN 60825-1:2007 |
| <b>RADIACIÓN LASER</b><br><b>NO MIRAR FIJAMENTE AL HAZ</b><br>Potencia máx. (peak): 3 mW<br>Duración del impulso: 8 µs<br>Longitud de onda: 655 nm<br><b>PRODUCTO LASER DE CLASE 2</b><br>EN 60825-1:2007               | <b>RADIAÇÃO LASER</b><br><b>NÃO OLHAR FIJAMENTE O FEIXE</b><br>Potência máx. (peak): 3 mW<br>Período de pulso: 8 µs<br>Comprimento de onda: 655 nm<br><b>EQUIPAMENTO LASER CLASSE 2</b><br>EN 60825-1:2007         |
| <b>LASER RADIATION</b><br><b>DO NOT STARE INTO BEAM</b><br>Maximum Output (peak): 3 mW<br>Pulse duration: 8 µs<br>Wavelength: 655 nm<br><b>CLASS 2 LASER PRODUCT</b><br>EN 60825-1:2007<br>Complies with 21 CFR 1040.10 | <b>激光辐射</b><br><b>勿直视光束</b><br>最大输出 (峰值): 3 mW<br>脉冲持续时间: 8 µs<br>波长: 655 nm<br><b>2 类激光产品</b><br>GB7247.1-2012                                                                                                    |