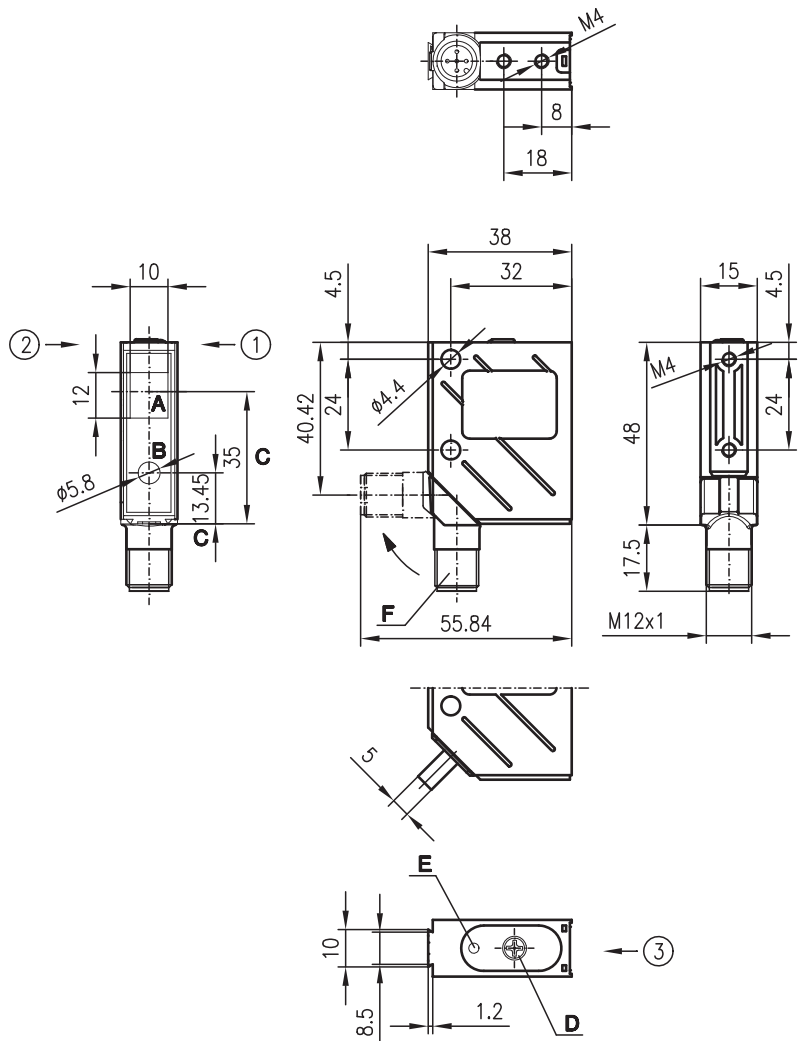


**HRTL 8 Laser diffuse reflection light scanner with background suppression**

en 08-2014/06 50116483-01



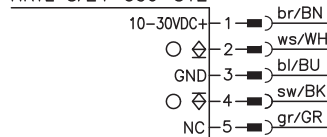
**Dimensioned drawing**



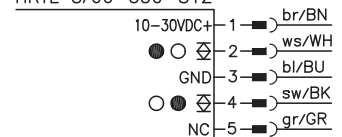
- A** Receiver
  - B** Transmitter
  - C** Optical axis
  - D** Operational control
  - E** Yellow LED
  - F** Turning connector, 90°
- Preferred entry direction for objects ① + ② + ③

**Electrical connection**

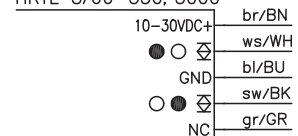
HRTL 8/24-350  
HRTL 8/24-350-S12



HRTL 8/66-350-S12



HRTL 8/66-350, 5000



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

**Accessories:**

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

We reserve the right to make changes • DS\_HRTL8\_350\_en\_50116483\_01.fm

## 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  
 Max. output power  
 Pulse duration

### Laser class 2

5 ... 400mm  
 see tables  
 50 ... 400mm  
 focussed  
 $\geq 0.5$ mrad  
 laser  
 670nm (visible red light)  
 3mW  
 $\leq 8\mu$ s

### Timing

Switching frequency 2000Hz  
 Response time 0.25ms  
 Delay before start-up  $\leq 100$ ms

### Electrical data

Operating voltage  $U_B$ <sup>3)</sup> 10 ... 30VDC  
 Residual ripple  $\leq 15\%$  of  $U_B$   
 Open-circuit current  $\leq 35$ mA  
 Signal voltage high/low  $\geq (U_B - 2V) \leq 2V$   
 Switching output/function .../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  
 max. 100mA  
 mechanical via multiturn potentiometer

Output current  
 Scanning range adjustment

### Indicators

Yellow LED object detected

### Mechanical data

Housing metal  
 Optics cover glass  
 Weight (plug/cable) 70g/140g  
 Connection type M12 connector, 5-pin or cable: 2000mm, 5x0.25mm<sup>2</sup>

### Environmental data

Ambient temp. (operation/storage)  $-10^\circ\text{C} \dots +40^\circ\text{C} / -40^\circ\text{C} \dots +70^\circ\text{C}$   
 Protective circuit<sup>5)</sup> 2, 3  
 VDE safety class<sup>6)</sup> II, all-insulated  
 Protection class<sup>7)</sup> IP 67, IP 69K<sup>8)</sup>  
 Laser class 2 (acc. to EN 60825-1)  
 Standards applied IEC 60947-5-2  
 Certifications UL 508, C22.2 No.14-13<sup>3)</sup> 9)

- 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

	Designation	Part No.
With M12 connector	HRTL 8/24-350-S12	500 36370
With 2m cable	HRTL 8/24-350	500 36371
With M12 connector	HRTL 8/66-350-S12	501 02705
With 5m cable	HRTL 8/66-350, 5000	501 03709

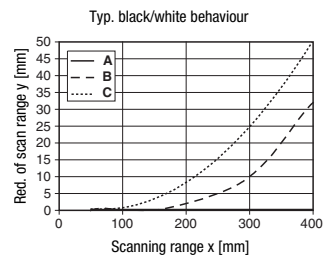
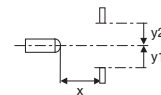
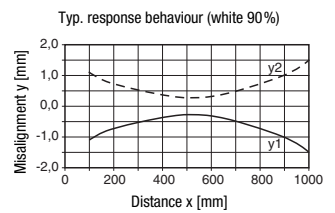
## Tables

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

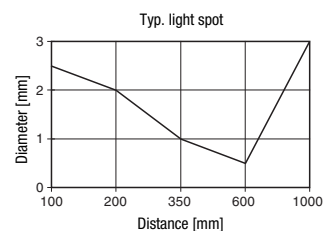
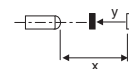
1	white 90%
2	gray 18%
3	black 6%

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

## Diagrams



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



## Remarks

- Install sensor inclined at angle of approx.  $10^\circ$  if used to detect objects with shiny surfaces.

**HRTL 8 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 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.

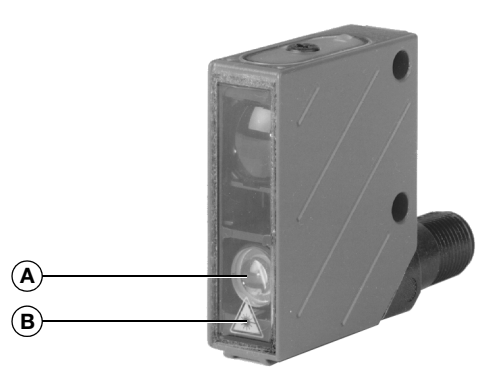
**NOTICE**

**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

**50107525-02**

<p style="text-align: center; font-size: small;">LASERSTRAHLUNG NICHT IN DEN STRAHL BLICKEN</p> <p style="font-size: x-small;">Max. Leistung (peak): 3 mW Impulsdauer: 8 µs Wellenlänge: 670 nm</p> <p style="text-align: center; font-size: x-small;">LASER KLASSE 2 DIN EN 60825-1:2008-05</p>	<p style="text-align: center; font-size: small;">RADIACIONE LASER NON FISSARE IL FASCIO</p> <p style="font-size: x-small;">Potenza max. (peak): 3 mW Durata dell'impulso: 8 µs Lunghezza d'onda: 670 nm</p> <p style="text-align: center; font-size: x-small;">APPARECCHIO LASER DI CLASSE 2 EN 60825-1:2007</p>
<p style="text-align: center; font-size: small;">LASER RADIATION DO NOT STARE INTO BEAM</p> <p style="font-size: x-small;">Maximum Output (peak): 3 mW Pulse duration: 8 µs Wavelength: 670 nm</p> <p style="text-align: center; font-size: x-small;">CLASS 2 LASER PRODUCT EN 60825-1:2007</p>	<p style="text-align: center; font-size: small;">RAYONNEMENT LASER NE PAS REGARDER DANS LE FASCIEAU</p> <p style="font-size: x-small;">Puissance max. (crête): 3 mW Durée d'impulsion: 8 µs Longueur d'onde: 670 nm</p> <p style="text-align: center; font-size: x-small;">APPAREIL À LASER DE CLASSE 2 EN 60825-1:2007</p>
<p style="font-size: x-small;">AVOID EXPOSURE – LASER RADIATION IS EMITTED FROM THIS APERTURE</p>	<p style="font-size: x-small;">EXPOSITION DANGEREUSE – UN RAYONNEMENT LASER EST EMIS PAR CETTE OUVERTURE</p>
<p style="text-align: center; font-size: small;">RADIACION LASER NO MIRAR FIJAMENTE AL HAZ</p> <p style="font-size: x-small;">Potencia max. (peak): 3 mW Duración del impulso: 8 µs Longitud de onda: 670 nm</p> <p style="text-align: center; font-size: x-small;">PRODUCTO LASER DE CLASE 2 EN 60825-1:2007</p>	<p style="text-align: center; font-size: small;">RADIACÃO LASER NÃO OLHAR FIXAMENTE O FEIXE</p> <p style="font-size: x-small;">Potência max. (peak): 3 mW Período de pulso: 8 µs Comprimento de onda: 670 nm</p> <p style="text-align: center; font-size: x-small;">EQUIPAMENTO LASER CLASSE 2 EN 60825-1:2007</p>
<p style="text-align: center; font-size: small;">LASER RADIATION DO NOT STARE INTO BEAM</p> <p style="font-size: x-small;">Maximum Output (peak): 3 mW Pulse duration: 8 µs Wavelength: 670 nm</p> <p style="text-align: center; font-size: x-small;">CLASS 2 LASER PRODUCT EN 60825-1:2007 Complies with 21 CFR 1040.10</p>	<p style="text-align: center; font-size: small;">激光辐射 勿直视光束</p> <p style="font-size: x-small;">最大输出 (峰值): 3 mW 脉冲持续时间: 8 µs 波长: 670 nm</p> <p style="text-align: center; font-size: x-small;">2 类激光产品 GB7247.1-2012</p>

