

**HRTR 3B Economy Diffuse reflection light scanner with background suppression**

en 10-2016/01 50107305



**5 ... 400mm**  
200mm with  
black-white error < 10%



- Diffuse reflection light scanner with visible red light and adjustable background suppression
- Exact scanning range adjustment through 8-turn potentiometer
- For all standard applications in the area of object detection and positioning (e.g. containers in conveyor and storage technology)
- Small and compact construction with robust plastic housing, protection class IP 67 for industrial application
- Fast alignment through *brightVision*®
- A²LS- Active Ambient Light Suppression
- Push-pull switching outputs
- High switching frequency for detection of fast events

We reserve the right to make changes • DS\_HRTR3Becon\_en\_50107305.fm

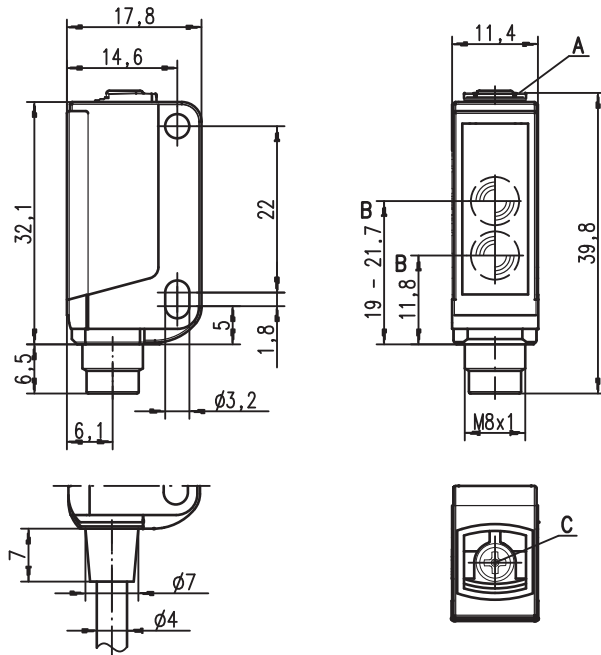


**Accessories:**

(available separately)

- Mounting systems (BT 3...)
- Cable with M8 or M12 connector (K-D ...)

**Dimensioned drawing**



- A** Yellow indicator diode
- B** Optical axis
- C** 8-turn potentiometer for scanning range adjustment

**Electrical connection**

Connector, 4-pin

10-30V DC +	1	br/BN
OUT 2/NC	2	bl/BU
GND	3	sw/BK
OUT 1	4	

Cable, 4 wires

10-30V DC +	br/BN
NC	ws/WH
GND	bl/BU
OUT 1	sw/BK

## Specifications

### Optical data

Typ. scanning range limit <sup>1)</sup>	5 ... 400mm
Scanning range <sup>2)</sup>	see tables
Adjustment range <sup>1)</sup>	15 ... 400mm
Light beam characteristic	focussed at 200mm
Light source <sup>3)</sup>	LED (modulated light)
Wavelength	620nm (visible red light)

### Timing

Switching frequency	1,000Hz
Response time	0.5ms
Delay before start-up	≤ 300ms (acc. to. IEC 60947-5-2)

### Electrical data

Operating voltage $U_B$ <sup>4)</sup>	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of $U_B$
Open-circuit current	≤ 15mA
Switching output	.../6.7 <sup>5)</sup> 1 push-pull switching output pin 4: PNP light switching, NPN dark switching pin 2: not connected <sup>6)</sup>
	.../6D.7 <sup>5)</sup> 1 push-pull switching output pin 4: PNP dark switching, NPN light switching pin 2: not connected <sup>6)</sup>
	.../44.7 2 PNP switching output pin 4: PNP light switching pin 2: PNP dark switching light/dark switching
Function characteristics	light/dark switching
Signal voltage high/low	≥ ( $U_B - 2V$ ) / ≤ 2V
Output current	max. 100mA
Scanning range	adjustable via 8-turn potentiometer

### Indicators

Yellow LED	object detected - reflection
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### Mechanical data

Housing <sup>7)</sup>	plastic (PC-ABS)
Optics cover	plastic (PMMA)
Weight	with connector: 10g with 2m cable: 50g
Connection type	2m cable (cross section 4x0.20mm <sup>2</sup> ), M8 plastic connector

### Environmental data

Ambient temp. (operation/storage)	-30°C ... +55°C / -30°C ... +70°C
Protective circuit <sup>8)</sup>	2, 3
VDE safety class	III
Protection class	IP 67
Light source	exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, CSA C22.2 No.14-13 <sup>4) 9)</sup>

- 1) Typ. scan. range limit/adjustment range: max. achievable scanning range/adjustment range for light objects (white 90%)
- 2) Scanning range: recommended scanning range for objects with different diffuse reflection
- 3) Average life expectancy 100,000h at an ambient temperature of 25°C
- 4) For UL applications: for use in class 2 circuits according to NEC only
- 5) The push-pull switching outputs must not be connected in parallel.
- 6) Pin 2: unassigned, hence especially suitable for the connection to AS-interface I/O coupling modules
- 7) Patent Pending Publ. No. US 7,476,848 B2
- 8) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs
- 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)

## 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.

### UL REQUIREMENTS

Enclosure Type Rating: Type 1  
**For Use in NFPA 79 Applications only.**  
 Adapters providing field wiring means are available from the manufacturer. Refer to manufacturers information.  
**CAUTION** – the use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.  
**ATTENTION!** Si d'autres dispositifs d'alignement que ceux préconisés ici sont utilisés ou s'il est procédé autrement qu'indiqué, cela peut entraîner une exposition à des rayonnements et un danger pour les personnes.

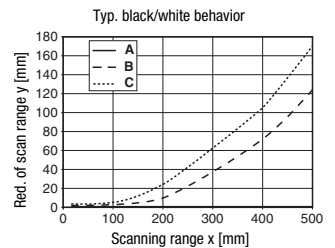
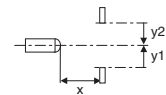
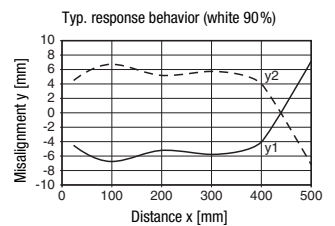
## Tables

1	5	400
2	10	300
3	15	200

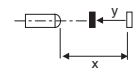
1	white 90%
2	gray 18%
3	black 6%

Scanning range [mm]

## Diagrams



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



## Remarks

Mounting system:



- ① = BT 3 (part no. 50060511)
- ②+③ = BT 3.1 <sup>1)</sup> (part no. 50105585)
- ①+②+③ = BT 3B (part no. 50105546)

1) Packaging unit: PU = 10 pcs.

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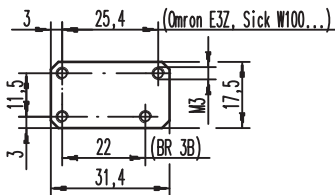
**Order guide**

Selection table				Order code →					
Equipment ↓				HRTR 3B/6.7 Part no. 50107240	HRTR 3B/6.7-S8 Part no. 50107241	HRTR 3B/2.7 Part no. 50107918	HRTR 3B/6D.7 Part no. 50107922	HRTR 3B/6D.7-S8 on request	HRTR 3B/44.7-S8 Part no. 50116876
Output 1 (OUT 1)	Push-pull switching output		light switching	○	●	●			
			dark switching	●			●	●	
	NPN transistor output		light switching	○			●		
			dark switching	●					
Connection	cable 2,000mm		4-wire		●	●	●		
			M8 connector, metal	4-pin					
	M8 connector, plastic		4-pin		●			●	●
	pin 2: not assigned, suitable for connecting to AS-i coupling module			●	●	●	●	●	
	PNP transistor output		light switching	○	●	●	●	●	●
			dark switching	●	●	●	●	●	●

**Application notes**



- Adapter plate: BT 3.2 (part no. 50103844) for alternate mounting on 25.4mm hole spacing (Omron E3Z, Sick W100...)



- For glossy surfaces (e.g. metals), the light beam should not be incident on the object surface at a right angle. A slight inclination is sufficient for preventing undesired direct reflections. This may result in a reduction in the scanning range.
- Objects should only be moved in laterally from the right or left. Moving in objects from the connector side or operating side is to be avoided.
- Outside of the scanning range, the sensor operates as an energetic diffuse reflection light scanner. Light objects can still be reliably detected up to the scanning range limit.
- The sensors are equipped with effective measures for the maximum avoidance of mutual interference should they be mounted opposite one another. Opposite mounting of multiple sensors of the same type should, however, absolutely be avoided.

