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

en 01-2015/05 50129426

5 ... 400 mm
200 mm with black-white error < 15 %

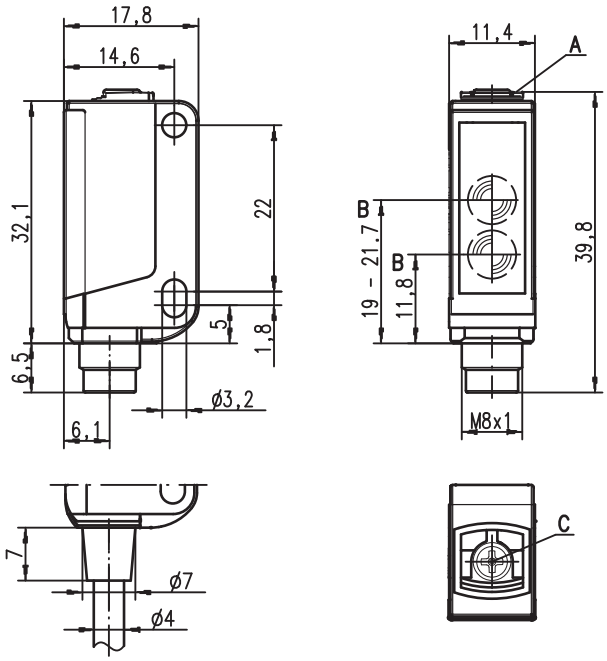
- Diffuse reflection light scanner with visible red light and adjustable background suppression
- Exact scanning range adjustment through 8-turn potentiometer
- For all standard applications in the area of object detection and positioning (e.g. containers in conveyor and storage technology)
- Small and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

Accessories:

(available separately)

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

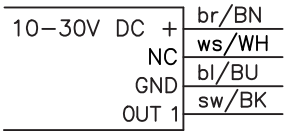
Dimensioned drawing



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

Electrical connection

Cable, 4 wires



Specifications

Optical data

Typ. scanning range limit [1]		5 … 400mm
Scanning range [2]		see tables
Adjustment range [1]		15 … 400mm
Light beam characteristic		focussed at 200mm
Light source[3]		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 [4]		10 … 30VDC (incl. residual ripple)
Residual ripple		≤ 15% of U_B
Open-circuit current		≤ 15mA
Switching output	…/4.71	1 PNP switching output pin 4: PNP light switching, pin 2: not connected
	…/2.71	1 NPN switching output pin 4: NPN light switching, pin 2: not connected
Function characteristics		light 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

Mechanical data

Housing	plastic (PC-ABS)
Optics cover	plastic (PMMA)
Weight	50g
Connection type	2m cable (cross section 4x0.20mm²)

Environmental data

Ambient temp. (operation/storage)	-30°C … +55°C/-30°C … +70°C
Protective circuit [5]	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 [4]

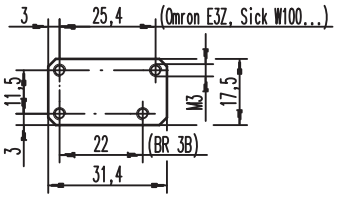
1) Typ. scan. range limit/adjustment range: max. achievable scanning range/adjustment range for light objects (white 90%)
2) Scanning range: recommended scanning range for objects with different diffuse reflection
3) Average life expectancy 100,000h at an ambient temperature of 25°C
4) For UL applications: for use in class 2 circuits according to NEC only
5) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs

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.

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



Tables

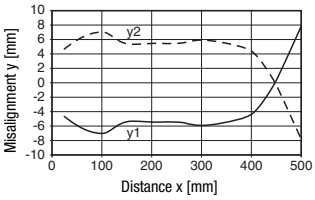
1	5	400
2	10	300
3	15	200

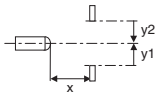
1	white 90%
2	gray 18%
3	black 6%

Scanning range [mm]

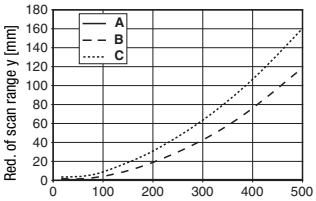
Diagrams

Typ. response behavior (white 90%)

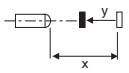




Typ. black/white behavior



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



Remarks

Mounting system:

① = BT 3
(part no. 50060511)

②+③ = BT 3.1 [1]
(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 Equipment ↓			Order code →		HRTR 3B/4.71 Part no. 50129101	HRTR 3B/2.71 Part no. 50128504
Output 1 (OUT 1)	PNP transistor output	⏚	light switching	○	●	
			dark switching	●		
	NPN transistor output	⏚	light switching	○		●
			dark switching	●		
Connection	cable 2,000 mm		4-wire		●	●

Application notes

- 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 cable 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.