HRTR 3B "L" Diffuse reflection light scanner with background suppression

5 ... 100mm
60mm with
black-white error < 10%

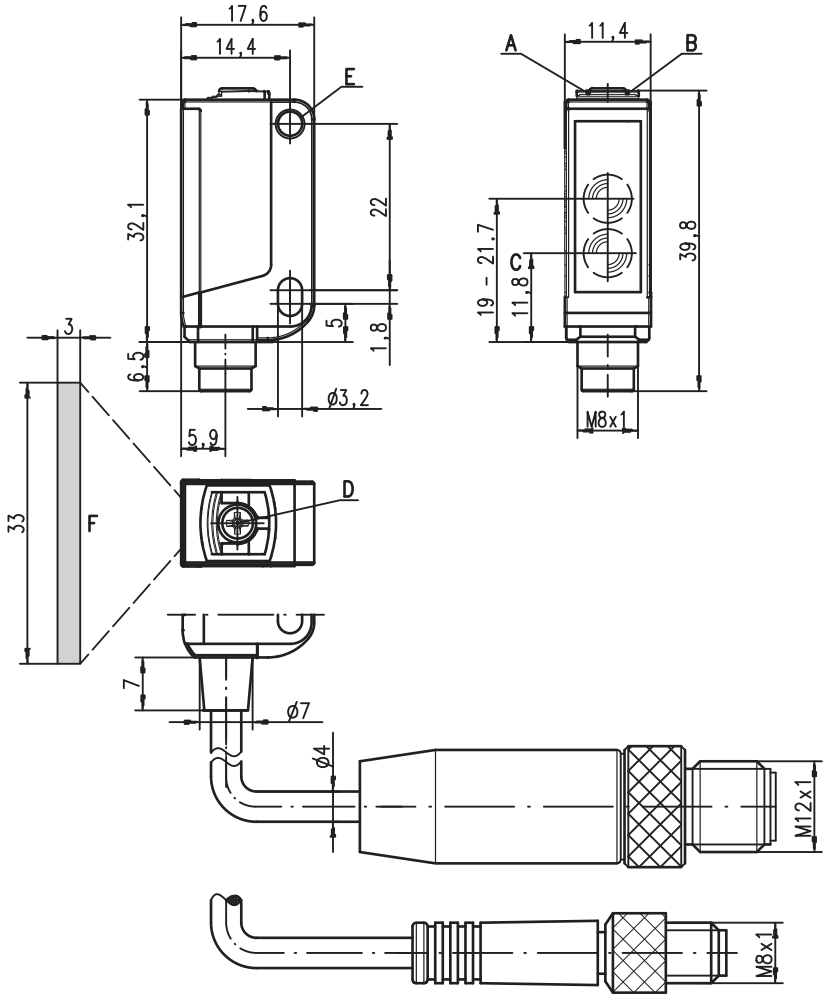
- Diffuse reflection light scanner with visible red light and adjustable background suppression
- Wide, rectangular light spot guarantees the reliable detection of:
  - objects with openings, holes and grooves
  - transparent foils and bottles
  - objects with grid structures (e.g. blister packs)
  - objects with variable position
- Small and compact construction with robust plastic housing, protection class IP 67 for industrial application
- A²LS- Active Ambient Light Suppression
- Push-pull switching outputs
- Specially designed for use with fluorescent lamps with electronic HF-ballast

Accessories:

(available separately)

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

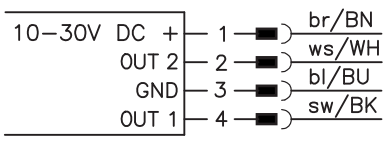
Dimensioned drawing



A Green indicator diode
B Yellow indicator diode
C Optical axis
D 8-turn potentiometer for scanning range adjustment
E Attachment sleeve
F Light spot 3x33mm at a scanning range of 50mm

Electrical connection

Plug connection, 4-pin



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Specifications

Optical data

Typ. scanning range limit [1]		5 … 100mm
Scanning range [2]		see tables
Adjustment range		20 … 100mm
Light spot		approx. 3 x 33mm² at 50mm
Light source [3]		LED (modulated light)
Wavelength		620nm (visible red light)

Timing

Switching frequency		150Hz
Response time		3.3ms
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	…/44	2 PNP switching outputs, complementary
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

Green LED	ready
Yellow LED	object detected - reflection

Mechanical data

Housing	plastic (PC-ABS); 1 attachment sleeve, nickel-plated steel
Optics cover	plastic (PMMA)
Weight	with connector: 10g with 200mm cable and connector: 20g with 2m cable: 50g
Connection type	2m cable (cross section 4x0.20mm²), connector M8 metal, 0.2m cable with connector M8 or M12

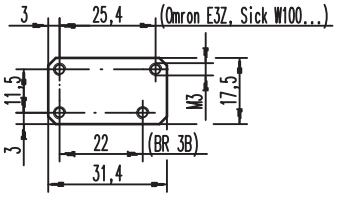
Environmental data

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	free group (in accordance with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 [4] [6]

1) Typ. scan. range limit: max. achievable scanning 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) Observe the safety regulations and installation instructions regarding power supply and wiring; for UL applications: only for use in "Class 2" circuits acc. to NEC
5) 2=polarity reversal protection, 3=short-circuit protection for all transistor outputs
6) 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

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



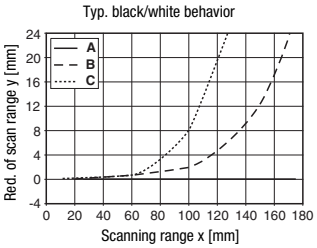
Tables

1	5	50	100
2	5	45	90
3	5	40	80

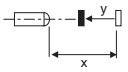
1	white 90%
2	grey 18%
3	black 6%

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

Diagrams



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



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.

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/44-L-S8 Part No. 50111443	HRTR 3B/44-L, 200-S8 Part No. 50113317									
Output 1 (OUT 1)	push-pull switching output		light switching ○											
			dark switching ●											
	PNP transistor output		light switching ○	●	●									
			dark switching ●											
	NPN transistor output		light switching ○											
			dark switching ●											
Output 2 (OUT 2)	push-pull switching output		light switching ○											
			dark switching ●											
	PNP transistor output		light switching ○											
			dark switching ●	●	●									
	NPN transistor output		light switching ○											
			dark switching ●											
Connection	cable 2,000 mm		4-wire											
	M8 connector, metal		3-pin											
	M8 connector, metal		4-pin	●										
	200 mm cable with M8 connector		3-pin											
	200 mm cable with M8 connector		4-pin		●									
	200 mm cable with M12 connector		4-pin											
	200 mm cable with XHP connector		4-pin											
	pin 2: not assigned, suitable for connecting to AS-i coupling module													
Configuration	freely adjustable via 8-turn potentiometer			●	●									
	preset to scanning range [mm]:													

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.
- 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.