

# HRTR 3B V      Diffuse reflection light scanner with V-optics and background suppression

en 03-2014/05    50115120-01



**15 ... 200mm**  
100mm with  
black-white error < 10%



- Diffuse reflection light scanner with visible red light, V-optics and adjustable background suppression
- Thanks to V-optics, it is specially suited to the detection of very shiny or polished surfaces in a range of 30 ... 70mm
- Very good black-white behavior and precise background suppression
- Exact scanning range adjustment through 8-turn potentiometer
- High switching frequency for detection of fast events
- Also available in economy design

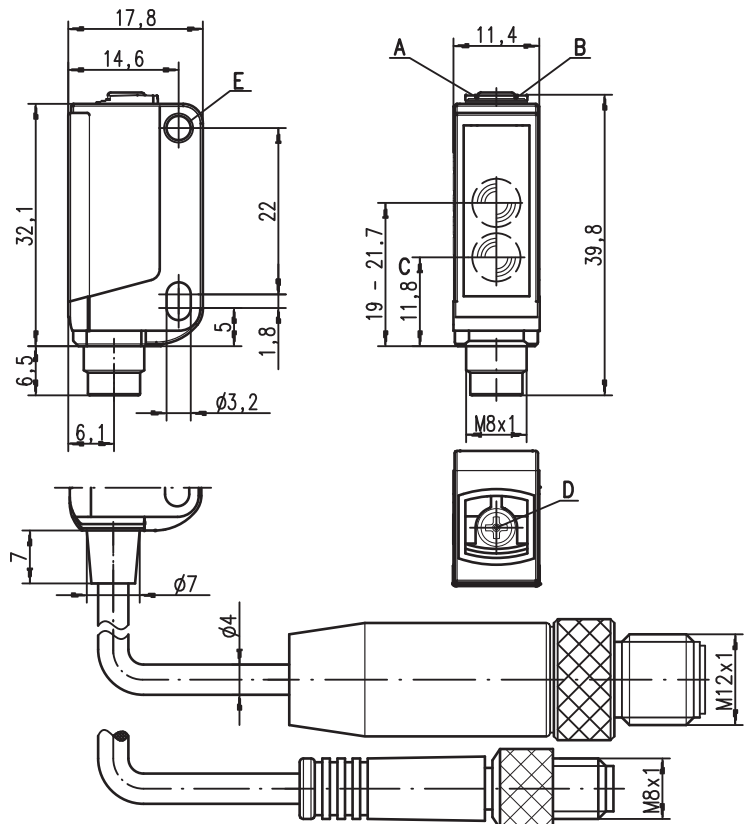


## Accessories:

(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

## Electrical connection

### Plug connection, 4-pin

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

### Cable, 4 wires

10-30V DC +	br/BN
OUT 2	ws/WH
GND	bl/BU
OUT 1	sw/BK

### Plug connection, 3-pin

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

We reserve the right to make changes • DS\_HRTR3BV\_en\_50115120\_01.fm

## Specifications

### Optical data

Scanning range <sup>1)</sup>	15 ... 200mm
Adjustment range <sup>1)</sup>	20 ... 200mm
Black/white error	< 10% up to 100mm
Light beam exit angle	typ. 11°
Light beam characteristic	focussed at 200mm
Light source <sup>2)</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>3)</sup>	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of $U_B$
Open-circuit current	≤ 15mA
Switching output	.../66 <sup>4)</sup> 2 push-pull switching outputs pin 2: PNP dark switching, NPN light switching pin 4: PNP light switching, NPN dark switching light/dark switching
Function characteristics	≥ ( $U_B - 2V$ ) / ≤ 2V
Signal voltage high/low	max. 100mA
Output current	adjustable via 8-turn potentiometer
Scanning range	

### Indicators

Green LED <sup>5)</sup>	ready
Yellow LED	object detected - reflection

### Mechanical data

Housing	plastic (PC-ABS); 1 attachment sleeve, nickel-plated steel <sup>5)</sup>
Housing color	red, RAL 3000
Optics cover	plastic (PMMA)
Fastening	through holes for 2 x M3
Weight	with connector: 10g with 200mm cable and connector: 20g with 2m cable: 50g
Connection type	M8 connector, metal <sup>6)</sup> , 0.2m cable with M8 or M12 connector, 2m cable (cross section 4x0.20mm <sup>2</sup> )

### Environmental data

Ambient temp. (operation/storage)	-30°C ... +55°C / -30°C ... +70°C
Protective circuit <sup>7)</sup>	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 <sup>3)</sup> 8)

- 1) Scanning range: recommended scanning range for objects with different diffuse reflection
- 2) Average life expectancy 100,000h at an ambient temperature of 25°C
- 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) N/A for economy design
- 6) M8 plastic connector for economy design
- 7) 2=polarity reversal protection, 3=short-circuit protection for all transistor outputs
- 8) 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)

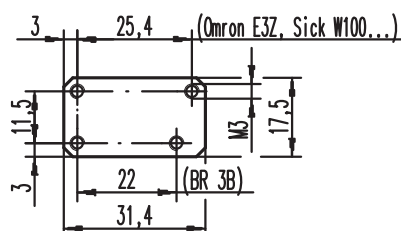
### Operate in accordance with intended use!

- ⚠ 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.

## Remarks

Adapter plate:

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



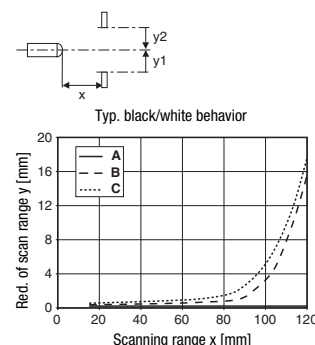
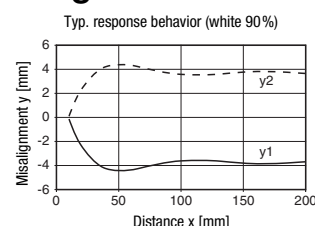
## Tables

1	15	200
2	15	180
3	15	130

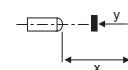
1	white 90%
2	gray 18%
3	black 6%

☐ 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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## Part number code

H	R	T	R		3	B	/	6	6	-	V	,	2	0	0	-	S	8	.	3
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### Operating principle

**HRT**      Diffuse reflection light scanners with background suppression

### Light type

**R**      Red light

### Construction/version

**3B**      3B Series

### Switching output/function (OUT 1: pin 4, OUT 2: pin 2)

**/66**      2 x push-pull transistor output, OUT 1: light switching, OUT 2: dark switching

**/6**      1 x push-pull transistor output, OUT 1: light switching

**/2**      1 x NPN transistor output, OUT 1: light switching

### Equipment

**.7**      Economy design

**-V**      With V-optics

### Electrical connection

**N/A**      Cable, PVC, standard length 2000mm, 4-wire

**-S8.3**      M8 connector, 3 pin (plug)

**-S8**      M8 connector, 4 pin (plug)

**,200-S8.3**      Cable, PVC, length 200mm with M 8 connector, 3 pin, axial (plug)

**,200-S8**      Cable, PVC, length 200mm with M 8 connector, 4 pin, axial (plug)

**,200-S12**      Cable, PVC, length 200mm with M 12 connector, 4 pin, axial (plug)

## Order guide

The sensors listed here are preferred types; current information at [www.leuze.com](http://www.leuze.com)

### Order code

### Part No.

HRTR 3B/66-V-S8      50114769

HRTR 3B/66-V, 200-S8      50114767

HRTR 3B/66-V, 200-S12      50114768

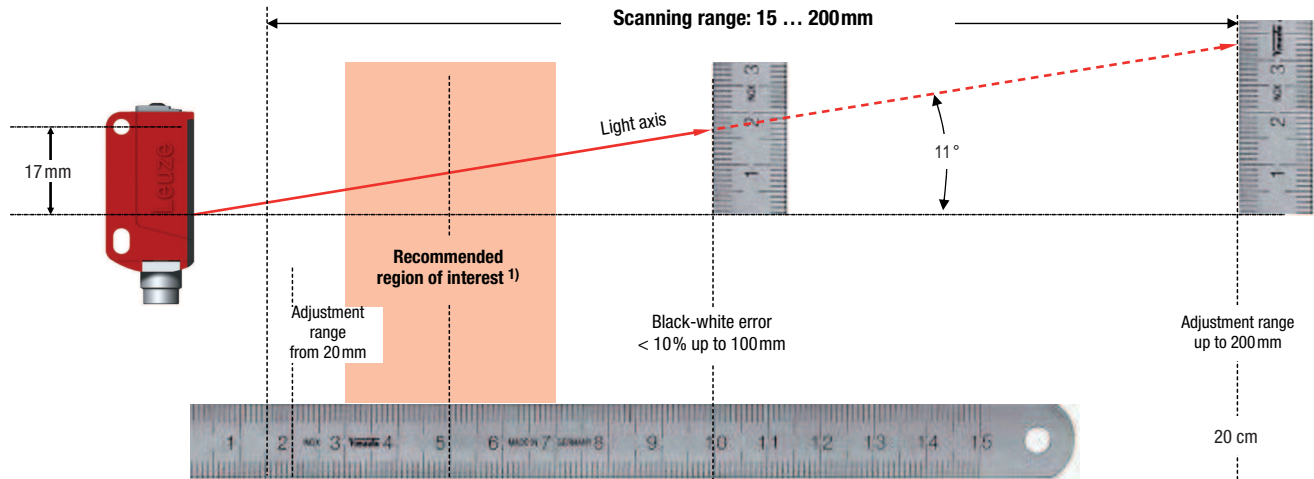
HRTR 3B/66-V      50114766

HRTR 3B/2.7-V      50115641

## Application notes



- The sensor must be aligned vertically and parallel to the object.
- Objects should only be moved in laterally from the right or left. Moving in objects from the connector side or operating side is not permitted.



1) The ability of the sensor to reliably detect reflective surfaces or transparent objects is the strongest in the recommended working range. The sensor can also reliably detect such objects in the entire scanning range; however, the performance reserve is reduced in comparison to the recommended working 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.