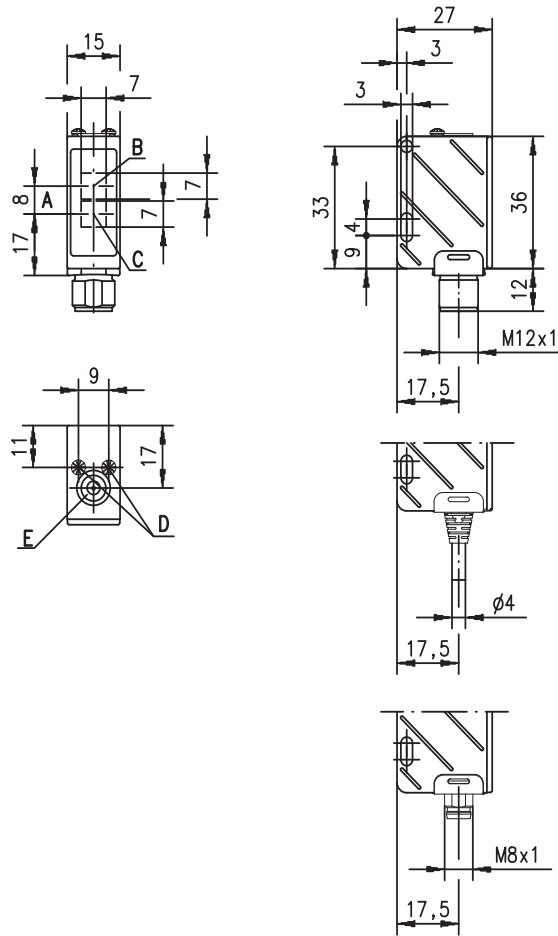


**HRTR 25 Diffuse reflection light scanner with teachable background suppression**

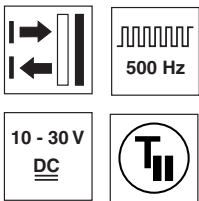
Part No. 501 08948



**Dimensioned drawing**



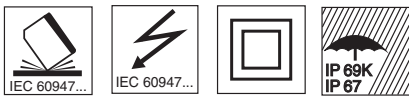
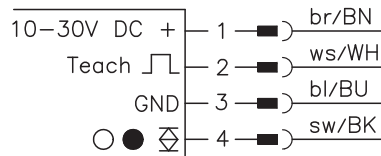
- A Optical axis
- B Transmitter
- C Receiver
- D Indicator diode
- E Teach button



**10 ... 200mm**

- CCD technology for colour-independent object detection
- Concise teachable background suppression
- Excellent black/white behaviour
- Visible red light
- Push-pull switching output

**Electrical connection**



**Accessories:**

(available separately)

- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Mounting systems

We reserve the right to make changes • 25\_d05gb.fm

## Specifications

### Optical data

Typ. scanning range limit (6% ... 90%) <sup>1)</sup>	10 ... 200mm
Scanning range <sup>2)</sup>	see tables
Teach range / adjustment range	25 ... 200mm
Light source	LED
Wavelength	660nm (red light)
Receiver	CCD line

### Timing

Switching frequency	100Hz ... 200Hz <sup>3)</sup>
Response time	5ms
Delay before start-up	≤ 100ms

### Electrical data

Operating voltage $U_B$	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of $U_B$
Power consumption	≤ 0.5W
Switching output/function	pin 4: PNP light switching, NPN dark switching or PNP dark switching, NPN light switching reversible via the teach button, or teach line (see remarks)
Signal voltage high/low	≥ ( $U_B - 2V$ ) / ≤ 2V
Output current	max. 100mA
Scanning range adjustment	via teach button, or teach line (see remarks)

### Indicators

Green LED	ready
Yellow LED	object detected
	additional display functions of the LEDs during the teaching process - see the "teaching process" description

### Mechanical data

Housing	plastic
Optics cover	plastic
Weight (plug/cable)	15g/55g
Connection type	M8 and M12 connector 4-pin or cable 2,000mm, 4x0.2mm <sup>2</sup>

### Environmental data

Ambient temp. (operation/storage)	-20°C ... +55°C / -40°C ... +70°C
Protective circuit <sup>4)</sup>	2, 3
VDE safety class <sup>5)</sup>	II, all-insulated
Protection class	IP 67, IP 69K <sup>6)</sup>
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

### Options

#### Teach input

Input resistance	10 kΩ ± 10%
Active/not active	$U_B/0V$ or not connected
Teach delay	≤ 0.5ms

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) Depends on the contrast difference between object and background
- 4) 2=polarity reversal protection, 3=short-circuit protection for all outputs
- 5) Rating voltage 250VAC
- 6) 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

### Approved purpose:

The light scanners are optical electronic sensors for optical, contactless detection of objects.

## Order guide

	Designation	Part No.
With M12 connector	HRTR 25/6.2-200-S12	500 39551
With M8 connector	HRTR 25/6.2-200-S8	500 39550
With 2m cable	HRTR 25/6.2-200	500 39549

## Tables

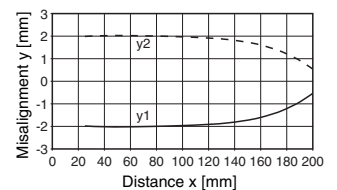
1	25	200	200
2	25	200	200
3	25	200	205
4	25	150	160

1	white 90%
2	grey 18%
3	black 6%
4	black 4%

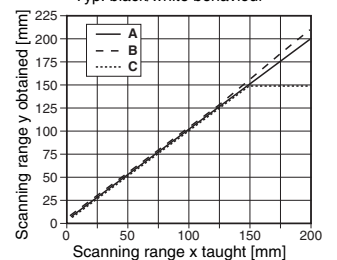
- Scanning range [mm]
- Typ. scanning range limit [mm]

## Diagrams

Typ. response behaviour (black 6% ... white 90%)

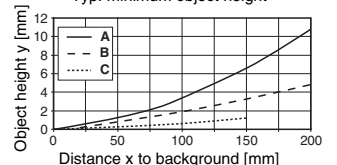


Typ. black/white behaviour



- A white 90% ... grey 18%
- B black 6%
- C black 4%

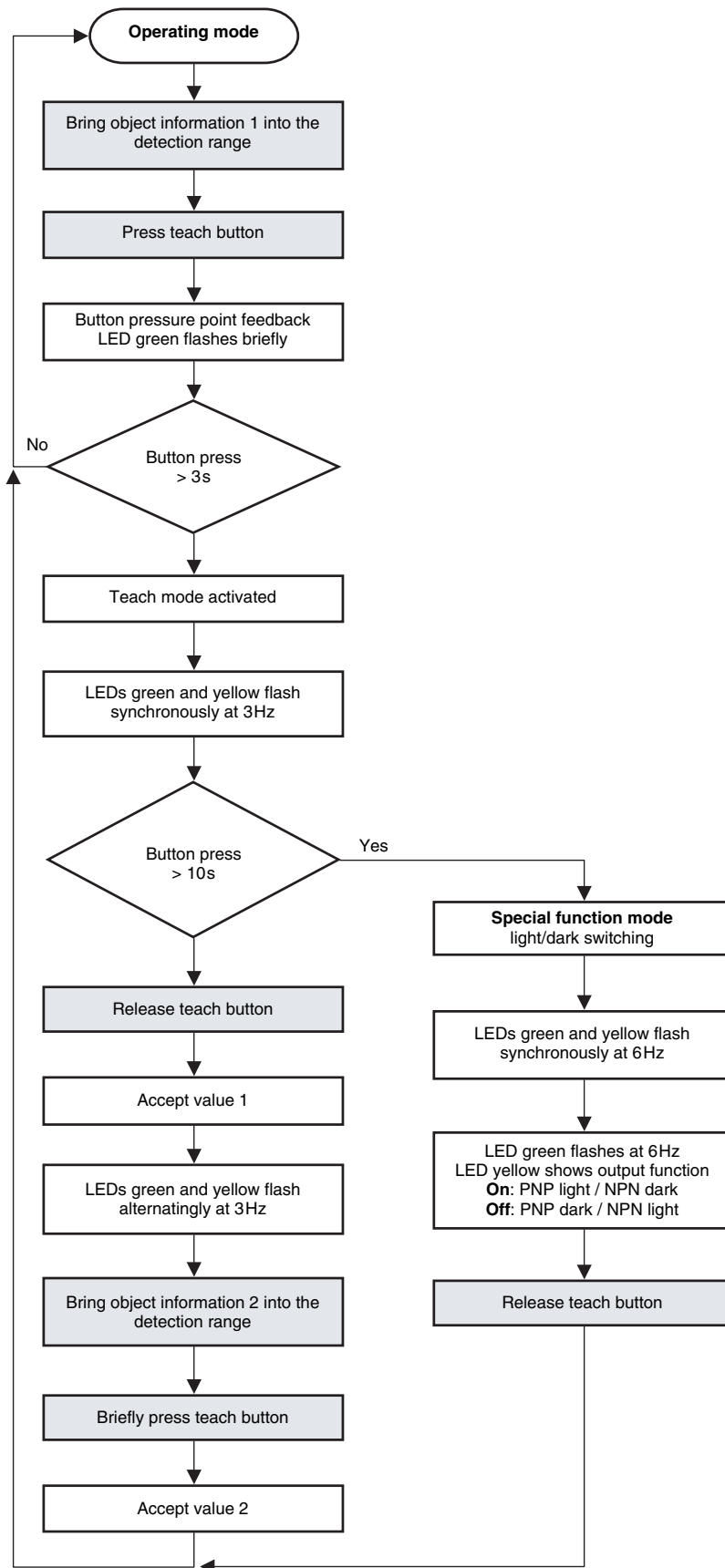
Typ. minimum object height



- A white 90% ... grey
- B black 6%
- C black 4%

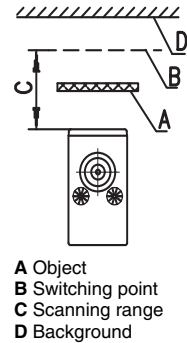
## Remarks

- Operate teach button with a blunt object.
- The teach process via teach line corresponds to that of the teach button.
- The maximum scanning range is reduced for objects with reflectivity ≤ 6% (see table and diagrams).
- The hysteresis changes depending on the reflectivity of the scanned object and the scanning range.



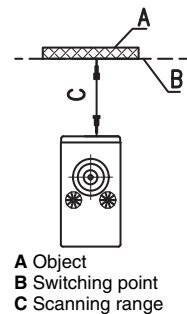
**Object detection in front of a background**

	Operation <sup>1)</sup>	Green LED	Yellow LED	Sensor
1.	Bring object into detection range	On	On/Off	
2.	Press teach button for 3s	Off → On	On/Off	Acknowledgement button press
3.		3Hz synchronously		
4.	Release teach button	3Hz alternatingly		Accept object distance
5.	Bring background into detection range	3Hz alternatingly		
6.	Briefly press teach button	On	Off	Accept background distance
7.	Sensor is in operating mode	On	Off	Switching point lies midway between object and background



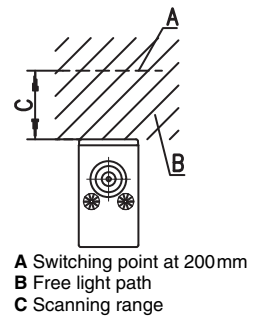
**Object detection without background**

	Operation <sup>1)</sup>	Green LED	Yellow LED	Sensor
1.	Bring object into detection range	On	On/Off	
2.	Press teach button for 3s	Off → On	On/Off	Acknowledgement button press
3.		3Hz synchronously		
4.	Release teach button	3Hz alternatingly		Accept object distance
5.	Briefly press teach button	On	On	Again, accept object distance
6.	Sensor is in operating mode	On	On	Switching point = object distance



**Setting the max. scanning range (max. sensitivity)**

	Operation <sup>1)</sup>	Green LED	Yellow LED	Sensor
1.	Remove object and background	On	On/Off	
2.	Press teach button for 3s	Off → On	On/Off	Acknowledgement button press
3.		3Hz synchronously		
4.	Release teach button	3Hz alternatingly		Accept free light path (200mm)
5.	Briefly press teach button	On	Off	Accept free light path again (200mm)
6.	Sensor is in operating mode	On	Off	Maximum possible scanning range is set



**Programming light/dark switching**

	Operation <sup>1)</sup>	Green LED	Yellow LED	Sensor
1.	Press teach button for 12 ... 18s	On	On/Off	
2.	Hold down teach button	Off → On	On/Off	Acknowledgement button press
3.	Hold down teach button	3Hz synchronously		
4.	Hold down teach button	6 Hz synchronously		
5.	Release teach button for PNP light switching NPN dark switching	6Hz	On	Output function 1 is programmed
6.	Release teach button for PNP dark switching NPN light switching	6Hz	Off	Output function 2 is programmed
7.	Sensor is in operating mode	On	On/Off	Switching point remains unchanged

1) The teach process via teach line corresponds to that of the teach button