HRT 53 Diffuse reflection light scanner with background suppression

en 02-2017/11 50137314

5 … 600 mm
250 mm with
black-white error < 10 %

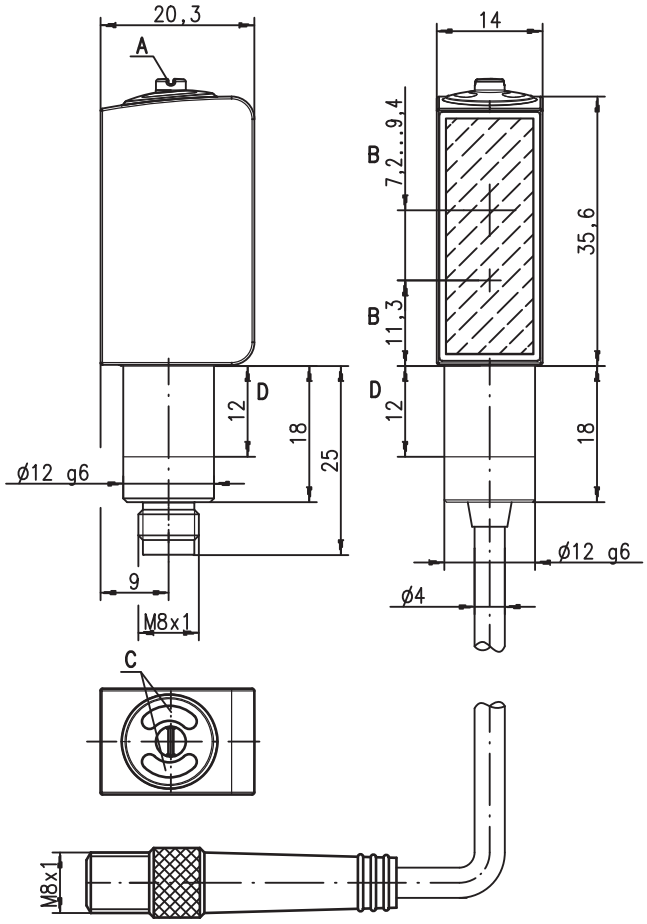
- Diffuse reflection light scanner with infrared light and adjustable background suppression
- 316L stainless steel housing in Hygiene-Design
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and Clean*Proof*+ tested
- Paperless device identification
- Scratch resistant and non-diffusive plastic front cover
- Exact scanning range adjustment through 8-turn potentiometer
- Very good black/white behavior and reliable switching nearly independent of the object or background properties
- A²LS- Active Ambient Light Suppression
- PNP switching output
- High switching frequency for detection of fast events

Accessories:

(available separately)

- Mounting systems (BT 3…)
- Cables with M8 connector (KD …)
- Mounting devices

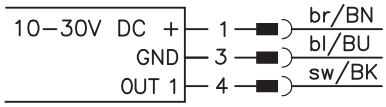
Dimensioned drawing



A Adjustment screw
B Optical axis
C Indicator diodes
D Permissible clamping range

Electrical connection

Connector, 3-pin



Specifications

Optical data

Typ. scanning range limit [1]		5 … 600mm
Scanning range [2]		see tables
Adjustment range		15 … 600mm
Light beam characteristic		focussed at 200mm
Light source [3]		LED (modulated light)
Wavelength		880nm (infrared)

Timing

Switching frequency		1000Hz
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	1 PNP switching output, light switching
Signal voltage high/low		≥ (U_B-2V)/≤ 2V
Output current		max. 100mA
Scanning range		adjustable via 8-turn potentiometer

Indicators

LED green	ready
Yellow LED	object detected - reflection

Mechanical data

Housing	AISI 316L stainless steel, DIN X2CrNiMo17132, W.No1.4404
Housing design	HYGIENE-Design
Housing roughness [5]	Ra ≤ 2.5
Connector	AISI 316L stainless steel, DIN X2CrNiMo17132, W.No1.4404
Optics cover	coated plastic (PMMA), scratch resistant and non-diffusive
Operation	plastic (TPV-PE), non-diffusive
Weight	with M8 connector: 50g
Connection type	M8 connector, 3-pin
Fastening	via fit (see "Remarks")
Max. tightening torque	3 Nm (permissible range, see dimensioned drawing)

Environmental data

Ambient temp. (operation/storage) [6]	-30°C … +70°C/-30°C … +70°C
Protective circuit [7]	2, 3
VDE safety class [8]	III
Protection class	IP 67, IP 69K[9]
Environmentally tested acc. to	ECOLAB, Clean*Proof*+
Light source	exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 [4] [6] [10]
Chemical resistance	tested in accordance with ECOLAB and Clean*Proof*+ (see Remarks)

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) For UL applications: for use in class 2 circuits according to NEC only
5) Typical value for the stainless steel housing
6) UL certification for a temperature range of -30°C to +55°C, operating temperatures of +70°C permissible only briefly (≤ 15min)
7) 2=polarity reversal protection, 3=short circuit protection for all transistor outputs
8) Rating voltage 50V
9) Only with internal tube mounting of the M8 connector
10) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.24A min, in the field installation

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

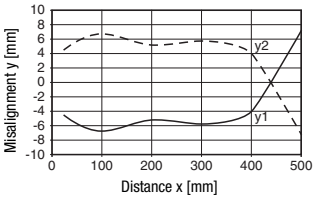
1	5	600
2	10	500
3	15	400

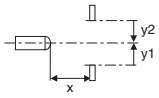
1	white 90%
2	gray 18%
3	black 6%

Scanning range [mm]

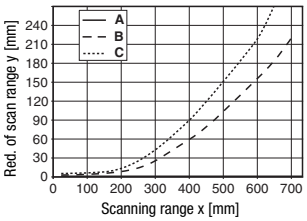
Diagrams

Typ. response behavior (white 90%)

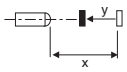




Typ. black/white behavior



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



Remarks

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.

- A list of tested chemicals can be found in the first part of the product description.
- Only secure in designated area using set screw. Max. tightening torque 3Nm.

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Order guide

Selection table Equipment ↓	Order code →	HRT 53/4-S8.3 Part No. 50137693			
Switching output	1 x PNP switching output	●			
Switching function	light switching	●			
	dark switching				
Connection	M8 connector, metal, 4-pin				
	M8 connector, metal, 3-pin	●			
	cable 200 mm with M 8 connector, 4-pin				
	cable 5000 mm, 4-wire				
Indicators	green LED: ready	●			
	yellow LED: switching output	●			

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 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.