

## HRT 96 Ex n

## Diffuse reflection sensor with background suppression



100 ... 1200mm

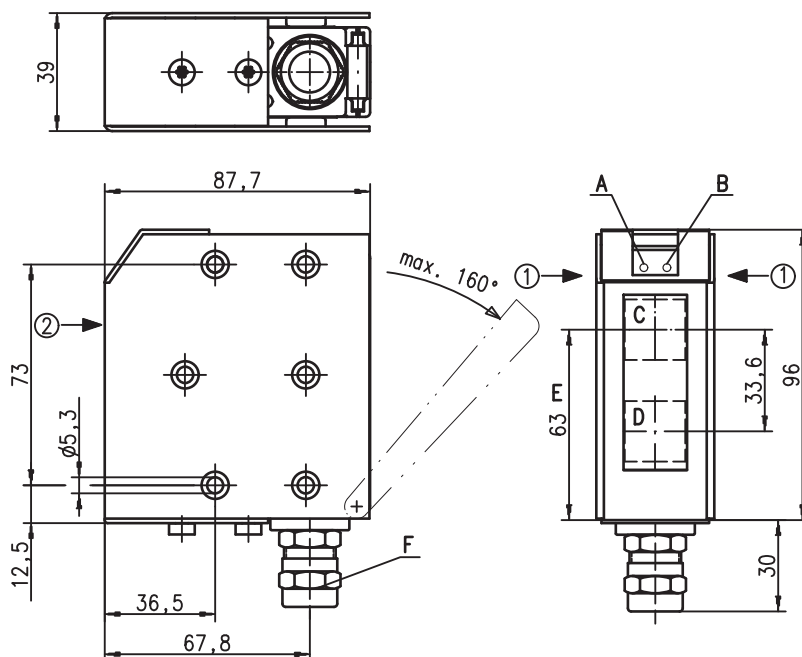
- Diffuse sensor with adjustable background suppression using visible red light
- Robust metal housing with shock-resistant optical window, degree of protection IP 67/ IP 69K for industrial application
- Complementary switching outputs, range adjustment and delay before start-up for optimal adaptation to the application
- Switching delay for optimal adaptation to the application
- Connection via comfortable terminal compartment
- ATEX certification:
  - Ex II 3G Ex ec IIB T4 Gc
  - Ex II 3D Ex tc IIIC T70 °C Dc
- IECEx BVS 21.0054:
  - Ex ec IIB T4 Gc
  - Ex tc IIIC T70 °C Dc

### Accessories:

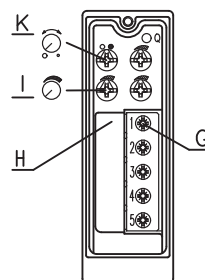
(available separately)

- Mounting systems (BT 96, BT 96.1, UMS 96, BT 450.1-96)

### Dimensioned drawing

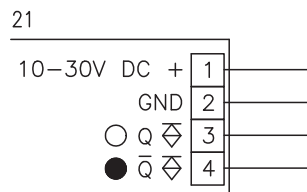


- A** Green indicator diode
- B** Yellow indicator diode
- C** Transmitter
- D** Receiver
- E** Optical axis
- F** Screwed cable gland M16x1.5 for Ø 5 ... 9mm
- G** Connection terminals
- H** Cable entry
- I** Range adjustment
- K** Light/dark switching



Preferred entry direction for objects: ① + ②

### Electrical connection



en 2022/04/28 50111376-06

We reserve the right to make changes • PAL\_HRT96MP-16x9\_800Ex\_en\_50111376\_06.fm

### Technical data

#### Optical data

Typ. maximum range (white 90%) <sup>1)</sup>  
 Operating range <sup>2)</sup>  
 Adjustment range  
 Light source  
 Wavelength

Red light  
 100 ... 1200mm  
 See tables  
 100 ... 800mm  
 LED (modulated light)  
 660nm

#### Time behavior

Switching frequency  
 Response time  
 Delay before start-up

300Hz  
 1.67ms  
 ≤ 200ms

#### Electrical data

Operating voltage  $U_B$   
 Residual ripple  
 Open-circuit current  
 Switching output  
 Function  
 Signal voltage high/low  
 Output current

10 ... 30VDC (incl. residual ripple)  
 ≤ 15% of  $U_B$   
 ≤ 35mA  
 PNP transistor  
 Light or dark switching (changeover-capable)  
 $\geq (U_B - 2V) \leq 2V$   
 Max. 100mA

#### Indicators

Green LED  
 Yellow LED

Ready  
 Reflection

#### Mechanical data

Housing  
 Optics cover  
 Weight  
 Connection type

**Metal housing**  
 Diecast zinc  
 Glass  
 380g  
 Terminals, cable diameter 5 ... 9mm  
 Wire cross section 0.5 ... 1.5 mm<sup>2</sup>  
 EEx e II clamping torque 3.5Nm  
 Terminal clamping torque 0.5Nm

Screwed cable gland

#### Environmental data

Ambient temp. (operation/storage)  
 Protective circuit <sup>3)</sup>  
 VDE protection class <sup>4)</sup>  
 Protection class  
 Light source  
 Standards applied

-20 °C ... +50 °C / -30 °C ... +55 °C  
 1, 2  
 II, all-insulated  
 IP 67, IP 69K <sup>5)</sup>  
 Exempt group (in acc. with EN 62471)  
 IEC 60947-5-2

#### Options

Switching delay (slow oper./release)

0 ... 10s (separately adjustable)

#### Explosion protection

Certification ATEX:

II 3G Ex ec IIB T4 Gc

Certification IECEx:

II 3D Ex tc IIIC T70 °C Dc  
 Ex ec IIB T4 Gc  
 Ex tc IIIC T70 °C Dc

- 1) Typ. range limit: max. attainable range without function reserve
- 2) Scanning range: recommended range with function reserve
- 3) 1=transient protection, 2=polarity reversal protection
- 4) Rating voltage 250 VAC
- 5) 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

### Order guide

	Designation	Part no.
With switching delay	HRT 96M/P-1639-800-21 Ex n	50111087
	HRT 96M/P-1649-800-21 Ex n	50111089

### Tables

#### Red light

	100	800	1200
1	100	770	1140
2	100	730	1050

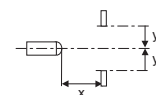
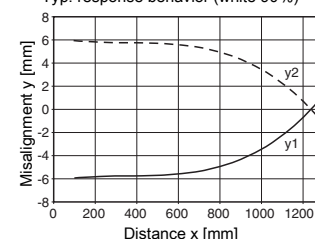
1	White 90%
2	Gray 18%
3	Black 6%

Range [mm]  
 Typ. maximum range [mm]

### Diagrams

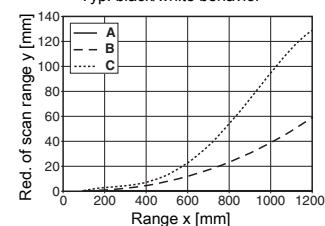
#### Red light

Typ. response behavior (white 90%)

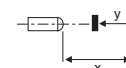


#### Red light

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 its intended use.

- With the set detection range, a tolerance of the upper scanning range limit is possible depending on the reflection properties of the material surface.

### Notices for the safe use of sensors in potentially explosive areas

This document is valid for devices with the following classifications according to the ATEX certification:

Device group	Device category	Equipment protection level	Zone
II	3G	Gc	Zone 2
II	3D	Dc	Zone 22

⚠ ATTENTION!	
	<ul style="list-style-type: none"> <li>● Check whether the equipment classification corresponds to the requirements of the application.</li> <li>● The devices are not suited for the protection of persons and may not be used for emergency shutdown purposes.</li> <li>● A safe operation is only possible if the equipment is used properly and for its intended purpose.</li> <li>● Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly or under unfavorable conditions in potentially explosive areas.</li> <li>● The applicable national regulations (e.g. EN 60079-14) for the configuration and installation of explosion-proof systems must be observed without fail.</li> </ul>

#### Installation and Commissioning

- The devices must only be installed and commissioned by trained electricians. They must be aware of the regulations and operation of explosion-proof equipment.
- Devices with terminal compartment lid (e.g. Series 96) must only be commissioned if the terminal compartment lid of the device is properly sealed.
- Connection cables and connectors must be protected from excessive or unintended pulling or pushing strain.
- Prevent dust deposits from forming on the devices.
- Metallic parts (e.g. housing, mounting devices) are to be integrated into the potential equalization to prevent electrostatic charge.

#### Maintenance

- No changes may be made to explosion-proof devices.
- Repairs may only be performed by a person trained for such work or by the manufacturer.
- Defective devices must be replaced immediately.
- Cyclical maintenance is generally not necessary.
- Depending on the environmental conditions, it may occasionally be necessary to clean the optical surfaces of the sensors. This cleaning must only be performed by persons trained for performing this task. We recommend the use of a soft and damp cloth. Cleaning agents containing solvents must not be used.

#### Chemical resistance

- The sensors demonstrate good resistance against diluted (weak) acids and bases.
- Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.
- Resistance to chemicals must be examined on a case by case basis.