



HRT 96 Ex n

Diffuse reflection light scanner with background suppression



100 ... 1200 mm



- Scanner with adjustable background suppression using visible red light
- Robust metal housing with shock-resistant optical window, protection class IP 67/ IP 69K for industrial application
- General light/dark switching and scanning range adjustment
- Switching delay for optimal adaptation to the application
- Connection via comfortable terminal compartment
- $\text{Ex}$  II 3G EEx nA II T4
- $\text{Ex}$  II 3D IP67 T70°C

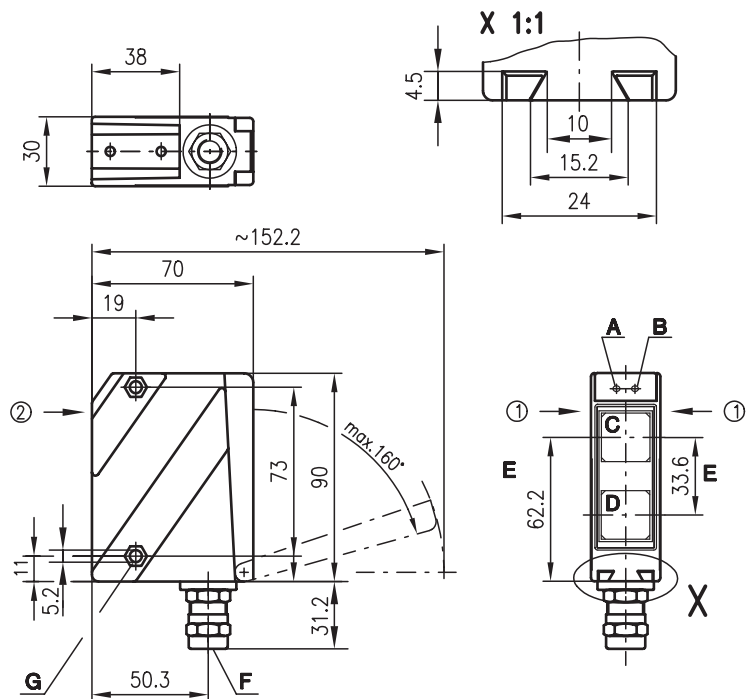


Accessories:

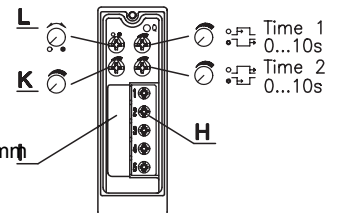
(available separately)

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

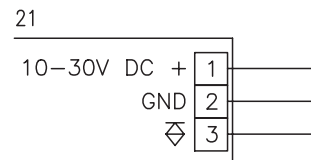
Dimensioned drawing



- A Indicator diode green
  - B Indicator diode yellow
  - C Transmitter
  - D Receiver
  - E Optical axis
  - F Screwed cable gland M16x1.5 for  $\text{Ø}$  5 ... 9 mm
  - G Countersinking for SK nut M5, 4.2 deep
  - H Connection terminals
  - I Cable entry
  - K Scanning range adjustment
  - L Light/dark switching
- Preferred entry direction for objects ① + ②



Electrical connection



We reserve the right to make changes • 96\_ex\_d12e.fm



## Specifications

### Optical data

Typ. scanning range limit (white 90%) <sup>1)</sup>  
 Scanning range <sup>2)</sup>  
 Adjustment range  
 Light source  
 Wavelength

### Red light

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

### Timing

Switching frequency  
 Response time  
 Delay before start-up

300Hz  
 1.67ms  
 ≤ 200ms

### Electrical data

Operating voltage  $U_B$   
 Residual ripple  
 Bias current  
 Switching output  
 Function characteristics  
 Signal voltage high/low  
 Output current

10 ... 30VDC (incl. residual ripple)  
 ≤ 15% of  $U_B$   
 ≤ 35mA, ≤ 75mA with optics heating  
 PNP transistor  
 light or dark switching (reversible)  
 ≥ ( $U_B - 2V$ ) / ≤ 2V  
 max. 100mA

### Indicators

LED green  
 LED yellow

ready  
 reflection

### Mechanical data

Housing  
 Optics cover  
 Weight  
 Connection type  
 Screwed cable gland

### Metal housing

diecast zinc  
 polycarbonate  
 380g  
 terminals, cable diameter 5 ... 9mm  
 EEx e II clamping torque 3.5Nm

### Environmental data

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

-10°C ... +70°C / -40°C ... +70°C  
 1, 2  
 II, all-insulated  
 IP 67, IP 69K <sup>5)</sup>  
 1 (acc. to EN 60825-1)  
 IEC 60947-5-2

### Options

Switching delay (slow oper./release)

0 ... 10s (separately adjustable)

### Explosion protection

Labelling (CENELEC)

Ⓔ II 3G EEx nA II T4      Ⓔ II 3D IP67 T70°C

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Scanning range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection
- 4) Rating voltage 250VAC
- 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-1630-800-21 Ex n	500 42094
	HRT 96M/P-1640-800-21 Ex n	501 02369

## Tables

### Red light

1	100	800	1200
2	100	770	1140
3	100	730	1050

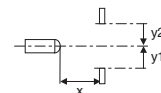
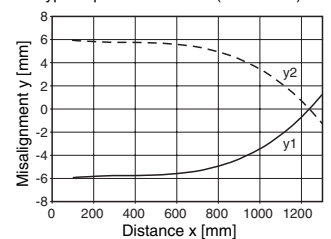
1	white 90%
2	grey 18%
3	black 6%

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

## Diagrams

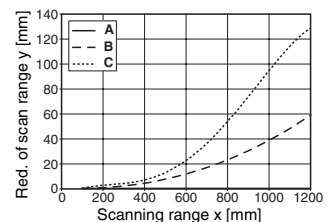
### Red light

Typ. response behaviour (white 90%)

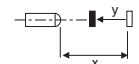


### Red light

Typ. black/white behaviour



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



## Remarks

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

**HRT 96 Ex n****Diffuse reflection light scanner with background suppression****Operating instructions for sensors of type HRT 96 M/P-16...0-800-21 Ex n for application in potentially explosive areas of zone 2 and 22.**

The sensors produced by Leuze electronic GmbH + Co. KG for use in potentially explosive areas are sensors which function on the optical electronic principle. Without making physical contact, these sensors detect objects which are located in or which pass through the light beam.

**Attention!**

Electrical equipment may endanger humans and (where applicable) animal health, and may threaten the safety of goods if used incorrectly and under unfavourable conditions in potentially explosive areas.

A safe operation in potentially explosive areas is only possible if the equipment is used properly and for its intended purpose.

This requires that the installation and operating instructions are adhered to and that appropriate measures are taken to ensure that this is effectively and permanently ensured.

**Notes!**

- In order to achieve a safe operation of sensors of Group II, Category 3 in potentially explosive areas, installation and protective devices appropriate to the application must ensure that operational events do not damage or overload the equipment.
- The lid of the device's terminal compartment must only be opened if no potentially explosive atmosphere is present.

**Installation, Commissioning**

In order to comply with the requirements acc. to EN 50 021 and EN 50 281-1-1, the following prerequisites must be met:

- Due to the physical circumstances, the photoelectric sensors of series 96 must not be used for the protection of persons or for purposes of emergency shutdown.
- The photoelectric sensors of series 96 must only be installed and maintained by trained electricians.
- For the photoelectric sensors of the 96 series, screwed cable glands tested and certified according to EEx e are used for openly laid cables and lines. These screwed cable glands may only be replaced by comparable, approved screwed cable glands.
- The photoelectric sensors of the 96 series must only be commissioned if the terminal compartment lid of the device is properly sealed.
- The applicable regulations for the installation of electrical equipment in potentially explosive areas must be observed.
- The requirements according to EN 50281-1-2 regarding dust deposits and temperatures must be observed.

**Maintenance**

No changes may be made to the devices of type HRT 96 M/P-1630-800-21 Ex n and HRT 96 M/P-1640-800-21 Ex n for potentially explosive areas.

Repairs to the sensors may only be performed by persons trained for such work or by the manufacturer. Defective devices must be replaced immediately.

Cyclical maintenance of the sensors is not necessary.

Depending on the environmental conditions, it may occasionally be necessary to clean the light-emission surfaces of the sensors.

This cleaning must only be performed by persons trained for performing this task.

A soft, damp cloth should be used for this purpose. Cleaning agents that contain solvents must not be used.

**Chemical Resistance**

The Series 96 sensors demonstrate good resistance against many diluted acids and bases.

Exposure to organic solvents is possible only under certain circumstances and only for short periods of time.

Resistance to chemicals should be examined on a case by case basis.



EG-Konformitätserklärung

EC Declaration of Conformity

Name des Herstellers:

Name of the manufacturer

**Leuze electronic GmbH+Co KG**

Anschrift:

Address:

**In der Braike 1 D-73277 Owen/ Teck**

erklärt unter alleiniger Verantwortung,  
dass das Produkt:

declares under sole responsibility that the  
products:

Bezeichnung:

Designation:

**HRT 96 M/P-1630-800-21 Ex n  
HRT 96 M/P-1640-800-21 Ex n**

Bestellnummer:

Order Number:

**500 42094  
501 02369**

Kennzeichnung Gas:

Marking for gas:

**II 3G EEx nA II T4**

Kennzeichnung Staub:

Marking for dust:

**II 3D IP67 T70°C**

folgenden Richtlinien und Normen für die  
Gerätegruppe II, Gerätekategorie 3 entsprechen  
und bei bestimmungsgemäßer Verwendung und  
Beachtung der Betriebsanleitung die  
grundlegenden Sicherheits- und  
Gesundheitsanforderungen erfüllen.

conform to the following directives and standards  
for equipment group II, equipment category 3.  
They fulfill the basic health and safety  
requirements if used as intended and in  
accordance with the operating manual.

Richtlinie 94/9/EG

Directive 94/9/EC

Richtlinie 89/336/EWG

Directive 89/336/EEC

EN 60947-5-2 1998+A1: 1999  
EN 60825-1: 1994+A1: 2002+A2: 2001  
EN 50021: 1999  
EN 50281-1-1: 1998+A1: 2002  
DMT 02 ATEX ZQS/ E 166

Owen, den

*14.9.06*

Michael Heyne  
(Geschäftsführer/General Manager)



Leuze electronic GmbH + Co. KG  
In der Braike 1  
D-73277 Owen-Teck  
Telefon (0 70 21) 57 30  
Telefax (0 70 21) 57 31 99  
http://www.leuze.de  
info@leuze.de

Die Gesellschaft ist eine Kommanditgesellschaft  
mit Sitz in Owen. Registergericht Kirchheim-Teck, HRA 712  
Persönlich haftende Gesellschafterin ist die  
Leuze-electronic Geschäftsführungs-GmbH mit Sitz in Owen  
Registergericht Kirchheim-Teck, HRB 550  
Geschäftsführer: Michael Heyne (Sprecher), Dr. Harald Grübel  
Vorsitzender des Verwaltungsrats: Meinert Hahnemann

Deutsche Bank AG Stuttgart  
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Steuer-Nr. 69026 / 10630  
USt-IdNr. DE 145912521

13 33 624 (BLZ 600 700 70)  
310 800 005 (BLZ 612 901 20)  
10 399 220 (BLZ 611 500 20)  
0 014 890 702 (BLZ 600 100 70)