

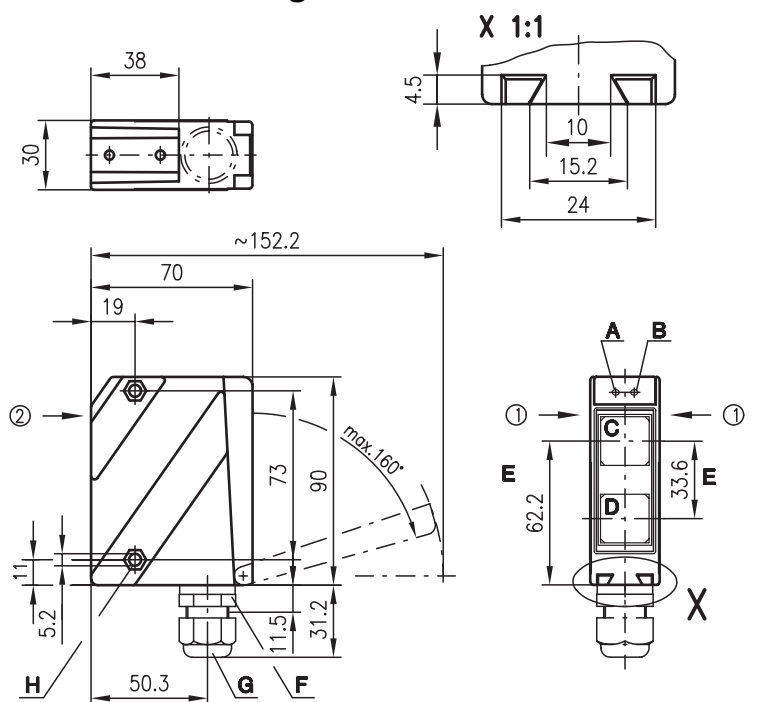
HRT 96
Diffuse reflection light scanner with background suppression

100 ... 2500mm

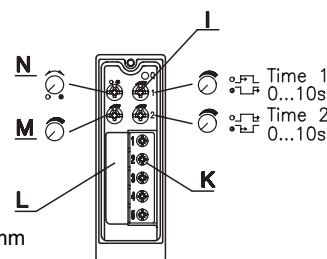

- Scanner with adjustable background suppression
- Two switching points
- Individual adaptation to applications by means of programming and diagnosis software
- Universal sensor application through optional foreground suppression or exact edge detection
- General light/dark switching or complementary switching/output, scanning range adjustment and delay before start-up for optimal adaptation to the application
- Robust metal housing with glass cover, protection class IP 67/IP 69K for industrial application


Accessories:
(available separately)

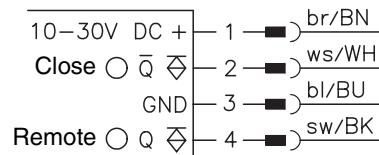
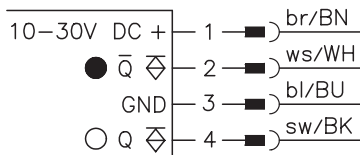
- Mounting systems (BT 96, BT 96.1, BT 450.1-96, UMS 96)
- Programming device UPG-2, Programming software
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing


- A** Indicator diode green
B Indicator diode yellow
C Transmitter
D Receiver
E Optical axis
F Device plug M12x1
G Screwed cable gland M16x1.5 for Ø 5 ... 10mm
H Countersinking for SK nut M5, 4.2 deep
I Output with option switching delay
K Connection terminals
L Cable entry
M Scanning range adjustment
N Light/dark switching
 Preferred entry direction for objects ① + ②


Electrical connection

42



see remarks !

Specifications

Optical data

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

HRT...1600...

100 ... 2500mm
 see tables
 150 ... 2000mm
 LED (modulated light)
 880nm

HRT...3604...

10 ... 2500mm
 see tables
 150 ... 2000mm

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
 PNP transistor
 light/dark switching (reversible)
 $\geq (U_B - 2V) \leq 2V$
 max. 100mA

Indicators

Sensor front

LED green
 LED yellow

ready
 reflection

ready

Sensor back

LED red/green

see table

reflection

Mechanical data

Housing
 Optics cover
 Weight
 Connection type

Metal housing

diecast zinc
 glass
 380g
 terminals or M12 connector

Environmental data

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

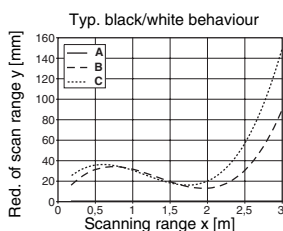
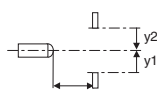
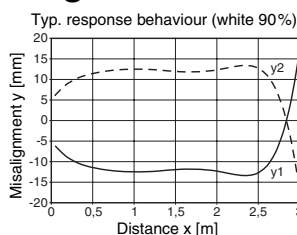
-20°C ... +60°C/-40°C ... +70°C
 1, 2, 3, 4
 II, all-insulated
 IP 67, IP 69K ⁵⁾
 1 (acc. to EN 60825-1)
 IEC 60947-5-2

Options

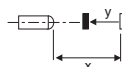
Switching delay (slow oper./release) 0 ... 10s (separately adjustable)

- 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, 3=short circuit protection for all outputs, 4=interference blanking
- 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

Diagrams



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



Order guide

Selection table		Order code →					
Equipment ↓		HRT 96M/P-1600-2000-42 Part No. 500 60857	HRT 96M/P-3604-2000-42 Part No. 500 60858				
Housing	metal	●	●				
Light source	infrared light (2000mm)	●	●				
Connection	M12 connector	●	●				
Features	short range		●				
	2 switching points		●				
	switching delay	●	●				
	complementary switching outputs	●					

HRT 96 M/P-1600-2000-42 - 05
 HRT 96 M/P-3604-2000-42 - 05

Tables

1	100	2000	2500
2	100	1990	2470
3	100	1980	2430

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

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

Light switching

Switching points	LED red	LED green	LED yellow
no detection (reflection on background)	on	off	off
detection distant range	off	on	on
detection close range	on	on	on

Dark switching

- **LED red/green:**
see Light switching
- **LED yellow:**
inverted

Remarks

- **General**
With the set scanning range, a tolerance of the upper scanning range limit is possible depending on the reflection properties of the material surface.
- **Reference scanner**
Scanner for safe detection of objects under most difficult environmental conditions (e. g. black object on white background). Is set through re-parametrisation of the standard HRT 96...3604... sensor via Software "Lupo".

HRT 96...3604...

- **Switching points**
Fixed ratio between short and distant range
s.r. ~0.5xd.r. Adjusting the distant range also sets the short range.
- **Switching output**
Pin/terminal
4/3=distant range
2/4=short range (standard)
2/4=programmable (e.g. activation input, compl. switching output)

HRT 96...1600...

- **Switching output**
Pin/terminal
4/3=switching output
2/4=compl. switching output
- Available as a set together with cable socket KD 095