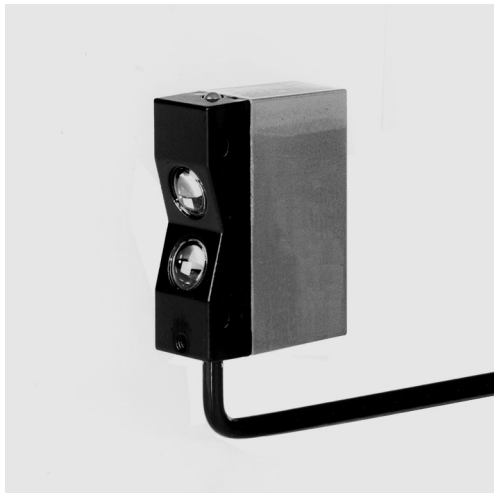


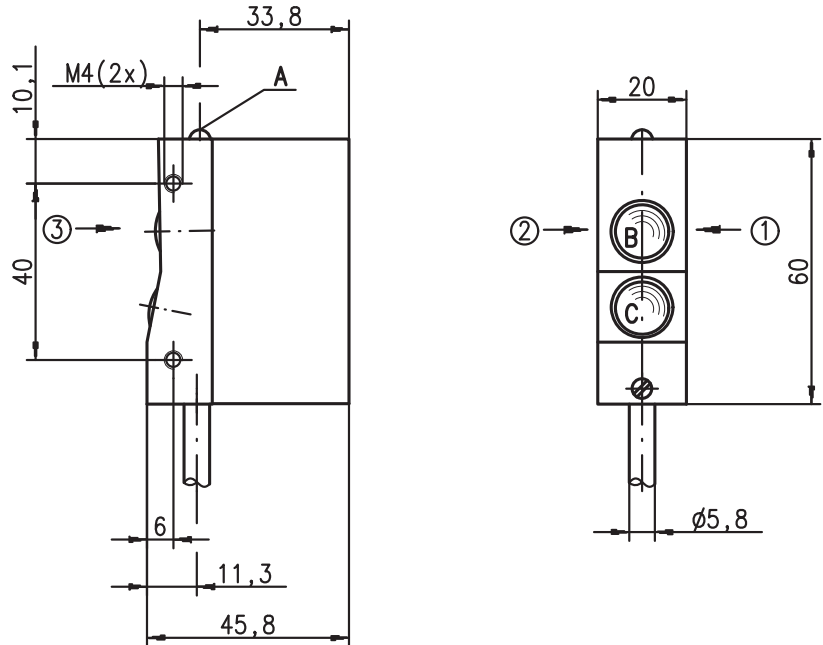
FRK 93

Diffuse reflection light scanner with background suppression

Part No. 501 11610



Dimensioned drawing



**30 ... 70m
m**



- Scanner with foreground and background suppression due to V-shaped optics
- Infrared light
- Very good detection of dark and glossy objects
- Mounting holes for fast installation
- Connection via cable

- A** Indicator diode
 - B** Receiver
 - C** Transmitter
- Preferred entry direction for objects ① + ② + ③



Accessories:

(available separately)

- Ready-made cables (KB ...)

Electrical connection

10-30V DC +	br/BN
●	ws/WH
○	sw/BK
GND	bl/BU
⊕	gnge/GNYE

We reserve the right to make changes • 93_d04gb.fm

Specifications

Optical data

Typ. scanning range limit (white 90%) ¹⁾	30 ... 70mm
Beam width	≤ 4mm at distance of 20 ... 35mm from the sensor, for the detection through a slit; ≤ 5mm at distance of 40 ... 60mm from the sensor
Reliable background suppression	≥ 100mm
Light source	LED (modulated light)
Wavelength	880nm (infrared)

Timing

Switching frequency	1000Hz
Response time	0.5ms

Electrical data

Operating voltage U_B ²⁾	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Power consumption	max. 2W
Switching output	PNP transistor output
Function characteristics	light/dark switching, complementary
Signal voltage high/low	≥ ($U_B - 3V$) / ≤ 2V
Output current	max. 100mA

Indicators

Red LED, on	reflection, output transistor activated
Red LED, flashing	reflection, no performance reserve

Mechanical data

Housing	metal
Optics	glass
Weight	approx. 170g
Connection type	cabl 3000mm

Environmental data

Ambient temp. (operation/storage)	-20°C ... +60°C / -30°C ... +70°C
Safety class	I (acc. to EN 61140)
Protective circuit ³⁾	2, 3
Protection class	IP 65 (acc. to EN 60529)
LED class	1 (acc. to EN 60825-1)
Ambient light	acc. to EN 60947-5-2
Applied standards	EN 60947-5-2, UL 508

- 1) Typ. scanning range limit: max. attainable range without performance reserve
- 2) Observe the safety regulations and installation instructions regarding power supply and wiring; for UL applications: only for use in "Class 2" circuits acc. to NEC
- 3) 2=polarity reversal protection, 3=short-circuit protection for all outputs

Order guide

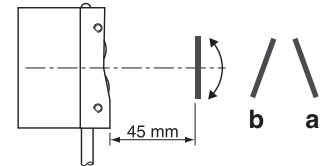
Designation	Part No.
FRK 93/44-60.2	501 06098

Tables

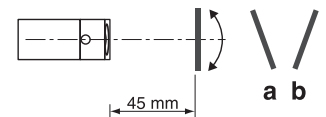
Material	Scanning range	Scanning range limit
A	65mm	70mm
B	63mm	68mm
2	60mm	65mm
7	50mm	55mm
11	65mm	70mm
17	80mm	85mm

A = white 90%
B = black 6%
2 ... 17 = materials specified by HOLZMA

Bracket behaviour



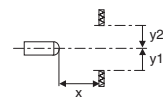
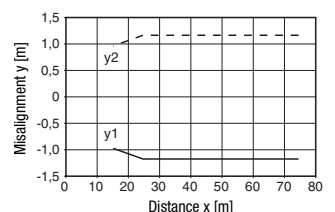
Material	Max. permissible tilt angle	
	a	b
2	30°	30°
7	7°	7°
11	10°	10°
17	7°	7°



Material	Max. permissible tilt angle	
	a	b
2	≥ 10°	≥ 10°
7		
11		
17		

Diagrams

Typ. response behaviour (TK 100x100)



Remarks

Approved purpose:

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